The MINING CONGRESS JOURNAL

MARCH
1933

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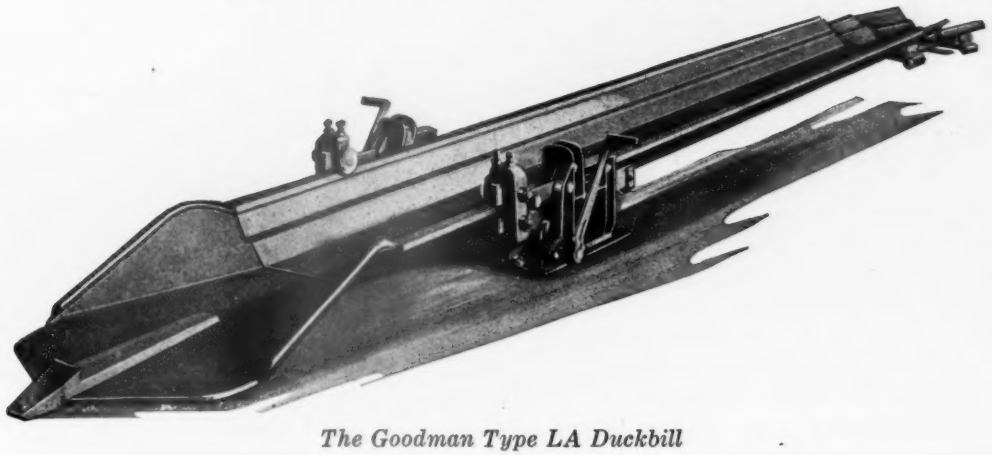

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(61)

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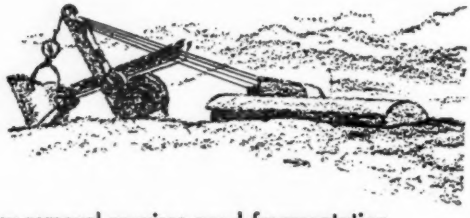

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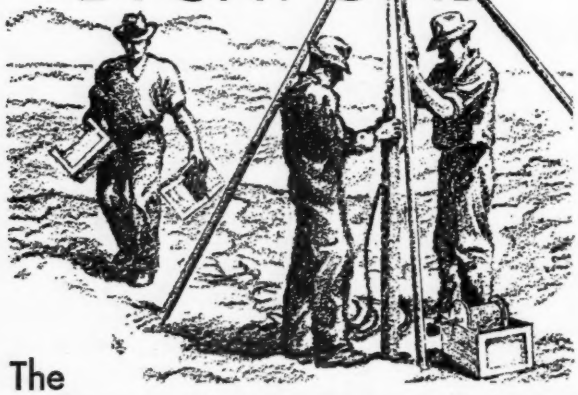

The
ENSIGN-BICKFORD COMPANY
SIMSBURY, CONNECTICUT

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E. R. COOMBES
Editor
NEWELL G. ALFORD
Associate Editor
FRANK B. COOK
Art Director
PARKER COTT
Field Representative
FRANK W. MORAN
Field Representative

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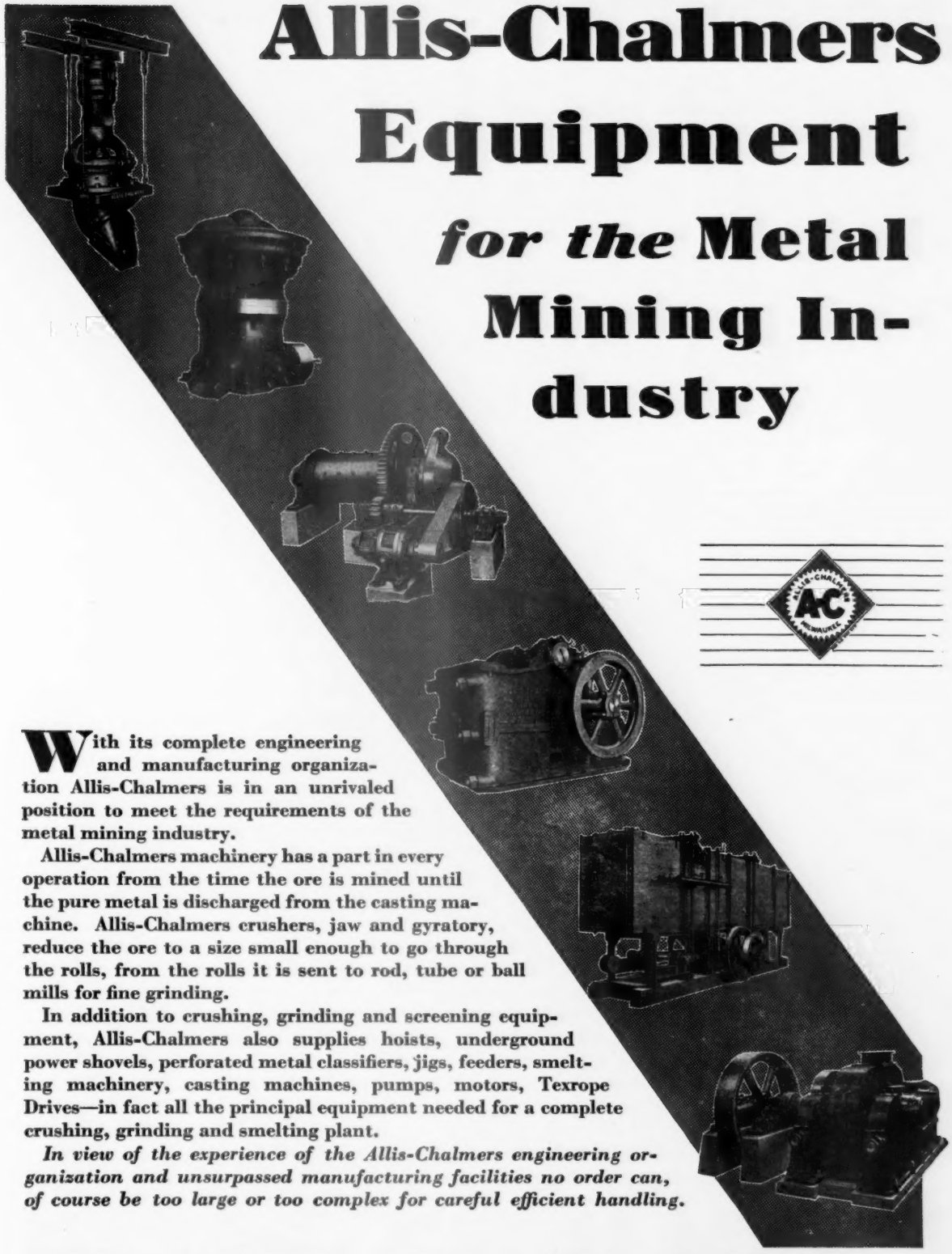

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MR. CALLBREATH'S PAGE

Our Vanishing Integrity

THE WORLD is going through a revolution of thought more pronounced than at any prior time in its history. This is manifested in a big way by European nations who desire to repudiate part or all of their obligations to the United States. It is demonstrated by the staid farmers of Iowa and other States, who not only feel that refusal to pay debts is justified, but that efforts to prevent foreclosures of mortgages is not only justified, but righteous.

Germany after the war began her unscrupulous methods by selling marks to the world at large, as well as to her own people, and then repudiating the value of the mark, leaving all those who had confidence in her integrity with a total loss of their investment. Internal debts were thus annihilated and the wage earner found his earnings of yesterday, greatly discounted today and worthless tomorrow. Then began a campaign of propaganda looking to a repudiation of Germany's debts as fixed in the negotiations following the armistice. Following this, leading European nations began by urging deductions from the amount of their several obligations to the United States, and when this country had surrendered a large part of the amount which was justly due, immediately instituted another campaign to escape payment of the remaining balance.

In the United States a general restlessness has developed on the part of debtors. Even the sturdy farmer of the West, heretofore the backbone of the Nation's integrity, is now appealing for relief from mortgage indebtedness which he contracted in good faith. The farmer, if his representatives can be believed, demands that his debts shall be cancelled, or at least greatly reduced. Not only does he request these favors, but by force of arms he prevents the foreclosure of mortgages and interferes with those individuals who undertake to market their product in order to secure funds with which to meet their own obligations. In other words those farmers who desire to be honest are forced by some of their fellows to become dishonest by making it impossible for them to meet the moral obligations assumed as borrowers.

In the handling of our Government more than a substantial part of our public officials believe it perfectly proper through the power of taxation to take from the prudent and industrious their savings for distribution among the wasteful and profligate.. Something like $400,000,000 of public money is now being paid to ex-soldiers for alleged illness or disabilities not the result of war service. Confidence in the integrity of all governments is being shaken to the foundation. The great business depression which has involved the world will soon be overcome by those processes of liquidation which bring conditions to a level. Whether we will be able to return to that condition in which integrity, honor and industry shall command the highest respect, or whether all our landmarks shall be swept away, presents a question which must command serious thought.

The one great question relates to unemployment. Hungry men cannot be expected to be over nice in discriminating between right and wrong. They cannot be greatly blamed for a relief that someone or some class must be responsible for these depressed conditions. The farmer who must pay four bushels of wheat to satisfy a debt which when contracted would purchase but one bushel of wheat, finds excuse, in this fact, for an effort to dodge his responsibility, rather than a warning against going into debt. It is hard for him to recognize that money is a measuring stick and that it is his wheat which has lost in value. He has a right, however, to demand that the measuring stick shall be inflexible. If all were employed and able to purchase all available wheat, its price would be more stable and business would be prosperous. Efforts looking to a solution lead to an examination of the sources of employment.

It is stated that building and building supply enterprises are concerned in approximately 70 per cent of employment and that mechanics' wages are so high as to prohibit building enterprises. It is further insisted that transportation costs must be reduced; that building costs must be reduced if this great source of employment is to be revived. Certain it is that present returns do not justify the present high cost of building enterprises. It is not that railroad and mechanics' wages are too high, but that these are out of proportion with the present purchasing power of the Nation under these abnormal conditions. Our Government is conducting an investigation as to causes and remedies. More than 50 of our leading business men have been before the Senate Finance Committee to give their views.

Never before in history have so many business men been ready to give of their time and effort for the relief of depression. Facts are stated and re-stated; causes are outlined and discussed; small groups after much effort are able to agree upon a course of action, but these groups are unable to agree with each other.

Some desire the appointment of a czar, and in justification of autocratic control insist that we are in worse than war conditions with the enemy within our gates and not 3,000 miles away.

The writer can see no hope through czars in industry nor through centralized control, but looks for relief to 50,000,000 czars in this country, each making a success of his own business by adjusting himself to the present business situation.

If a proper separation between the function of Government and the needs of industry can be determined, Government at greatly reduced cost will be able to more effectually exercise its public utility fuctions to the great benefit of the Nation and without the handicap of improper tax burdens, business will soon find employment for all who are willing to work.

Let us hope these results can be accomplished without the repudiation of contracts. Let us hope that at least every citizen of this country will regard his own personal integrity as his most important and valuable asset.

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A Journal for the entire mining industry published by The American Mining Congress

DAY-TO-DAY WASHINGTON

WE ARE PRONE to believe that industry's problems increase when Congress is in session. Perhaps they do, but we have had our national Congress in practically continuous session for months, and no one can say whether it has helped or injured industry. The outlook is that we shall have it with us for many, many more months. The certainty of the special session of the 73rd Congress makes this inevitable. In times of difficulty the demand for congressional action is tremendous, but when the difficulties are passed, we urge just the reverse. Right now the demand is that the Congress do something. Many seriously believe that Congress is our only answer to our present situation. Hands are extended toward it, beseechingly from every corner.

But it is not Congress that those who ask have in mind. It is Washington, and Congress is not Washington. We have developed, through our system of government, a machine that is working continuously; a machine that is composed of hundreds of commissions, bureaus, and committees; a machine as frequently helpful as harmful; a machine with which industry must deal if it is to continue its existence.

The mining industry is intricately involved in these things. Many changes are contemplated and are inevitable. We should be on the alert to assist the new regime, and to protect our interest in the readjustment.

THE PROTECTIVE TARIFF POLICY

THERE REMAINS little doubt but that the new Administration will seek to make effective "reciprocal tariffs." The mining industry, depending in many instances for its very existence upon an adequate tariff, is deeply concerned.

Critics base their opposition upon the allegation that tariffs increase the cost to the consumer. This theory is not supported by the facts. The ability to buy is very much more important than the price. It is vastly more desirable, from the standpoint of American industry, that the worker be employed at a reasonable wage which will enable him to meet his necessary living expense, plus a small surplus for luxuries, than that the price of a commodity be reduced to the lowest level.

The government, which creates conditions under which a wage earner may meet his obligations and have a surplus, has accomplished a great industrial purpose. From industry's standpoint, the real virtue of our government lies in the fact that our wage earners have achieved a standard that is the envy of all other countries. The political party that brings back the fullest realization of that ideal will receive the heartiest commendation of all the people.

WHO IS SUFFERING FROM THE DEPRESSION?

FROM EVERY QUARTER come suggestions by which the serious situation we are facing may be successfully met. Recently the Senate Finance Committee heard the views of fifty or more prominent leaders of industry, and each presented his personal view as to what, if anything, the government can do to remedy the situation.

At a recent meeting of the National Civic Federation, farmer organizations told of a revolution which is being staged by western farmers; labor organizations stressed the importance of the 5-day week, 6-hour day without pay reduction.

Out of it all may come some really helpful suggestion. Jobs for the unemployed is the only answer to this and all other unemployment situations. Unemployment cannot be continued indefinitely. Labor is not alone in its misery. For perhaps the first time in history larger aggregations of capital were the first to suffer. Fortunes running into millions have been utterly dissipated. President Willard of the Baltimore & Ohio Railroad asserted that the stockholders in the railroads in the United States have already lost eight billions; that the securities of bond holders are greatly reduced in value; that competition of various kinds have reduced the earning power of railroads and that there must be some other field developed from which an increase in expense could be provided.

We, along with the rest of the world, have no real solution. It is hoped that out of this welter of opinions there may emerge some accredited plan, either of governmental action or of industrial leadership, that will wipe out the pathetic spectacle of suffering in the midst of plenty.

CURRENCY AT PAR

THE UNITED STATES has been able to maintain a gold standard notwithstanding the disappearance of $25,000,000,000 of credit money, which during flush times had been available for business transactions.

The much abused Smoot-Hawley tariff bill from 1922 to 1929 witnessed the most extraordinary prosperity that this or any other country has ever seen. We built a structure of credit money which could not be supported by the small gold foundation upon which it rested. Upon wings of unjustified confidence we flew to financial disaster. This condition, universal in its application, forced most of the countries of the world off the gold standard. France, owning many times its proportionate share of the world's gold, depreciated its currencies at 25 percent of their normal value. By this process internal debts were very quickly liquidated and the wage earner was required to accept a wage with greatly depreciated purchasing power.

The United States is the one country in the world which maintains the value of its currency at par and pays its wages in a gold supported currency at face value. Our standards of living are such that a comparatively high wage level is essential. Whenever the living standards of competing countries are raised to the same level as our own there will be no need of tariff protection. Without that protection there must be a levelling down of our standards to those of foreign countries with which we are in continuous competition.

RESTRICTING PRODUCTION

AT THE HEAD of articles published in many of the leading papers of the United States recently appeared the headline "Farm Borrowers Must Cut Acreage." The most ridiculous big thing in the world today is the act of government, through its Department of Justice, threatening with prosecution any coal operator who suggests as unfair the advisability of reducing output with a view to balancing the supply to meet the known demand, and that same govern-

ment, through other executive agencies, not only permitting but requiring a reduction of the production of food stuffs.

A ton of coal is a ton of coal; an acre of wheat may be 50 bushels or it may be 5 bushels; an acre of potatoes may be 962 bushels (a Colorado record of last year) or it may be 25 bushels; an acre of oats may be 80 bushels or it may be 8 bushels. If this restriction of acreage should be coincident with the smaller crop, famine would result. To prevent this the anti-trust laws have declared that a reduction of output or increase in price by mutual agreement between two or more parties is a criminal conspiracy. The refusal to reduce acreage in food stuffs is to be punished, while the extreme reverse of this principle is applied to coal. It is to laugh. It is plainly "ricka-doodleus," as a distinguished Colorado lawyer has pronounced the word "ridiculous" for so long that he now believes in it.

The fact that crops are always reproducible and minerals once exhausted cannot be replaced makes this contrast the more intensely foolish. The moral is that agreements to restrict production when such restriction serves a useful public purpose should not be prohibited.

THE UNITED STATES BUREAU OF MINES

THE BUREAU OF MINES is the official representative of the mining industry in our government, and, as such, it is entitled to the constructive cooperation of every branch of that industry. After March 4 the new administration has been given authority to reorganize government departments; to consolidate, or eliminate such agencies as the President may deem advisable.

There is an idea prevalent that something will be done with the Bureau of Mines, that it is to be transferred to some department other than the Commerce Department. Resolutions have been adopted by mining organizations against this procedure or against any disturbance of the Bureau as now constituted. Numerous letters are being received protesting any change in the present set-up.

The Bureau has served the mining industry faithfully, and well. Both the industry and this office have frequently disagreed with some of its ideas, but on the whole it has done splendid work and deserves the support of mining men. It is to be hoped that in any plan for reorganization the work of this Bureau will not be further curtailed and that its personnel will not be disturbed. The industry should rally to its support in any idea advanced that will make this Bureau ineffective.

FORGIVING OUR DEBTORS

THERE IS MUCH propaganda in favor of cancelling our foreign debts. The Washington Herald recently made the following succinct comment:

"Says Bernard M. Baruch in Washington:

"Every debt we forgive to other nations lifts a burden from their distressed business and adds it to our distressed business, thus DOUBLING OUR HANDICAP.

"Surely it is a fair rule to refuse relief unless the burden of the debtor's taxes on his income is as heavy as our own.

"I am told this test would rule out every present claim on us for debt revision."

"If any of our cancellationists can upset that statement, why don't they?"

MINING STANDARDS

AT THE ANNUAL meeting of the Mining Standardization Correlating Committee, a review of mining projects before it indicated a greater interest, more intensive effort and real progress in developing for the mining industry a Standard Operating code.

The American Mining Congress presented its most recent "Recommended Practice" for adoption. It covers recommendations on Frogs, Switches and Turnouts for Coal Mine Tracks. The report was unanimously approved and sent to the American Standards Association for approval. Thus another step forward has been completed.

In announcing the program for the immediate future, The American Mining Congress revealed an ambitious plan whereby, eventually, there will be developed a standard practice for all major phases of mine operation. It is to be hoped that the program can be carried through. It will open the door to simpler, safer and more efficient mineral production.

THE DIRECTOR OF THE BUDGET

LEWIS W. DOUGLAS, Representative in Congress from Arizona—soldier, miner and eminent citizen—is the choice of President-elect Roosevelt for the important place of Director of the Budget. The dependable structure of the new administration is evidenced and emphasized in this selection. At the beginning of his fourth term in Congress, Mr. Douglas is making a definite sacrifice in the service of his country in courageously attacking the all but overwhelming problem of balancing the budget. His background, his ancestry and his performance to date indicate his qualifications for this gigantic task. His paternal grandfather, James S. Douglas, was for years a leading American citizen, a mining man of distinction and an industrialist of great note. The Douglas family has added immeasureably to the greatness of the mining industry. In this wide sphere we may confidently expect real service from Representative Douglas.

THE MAY MEETING

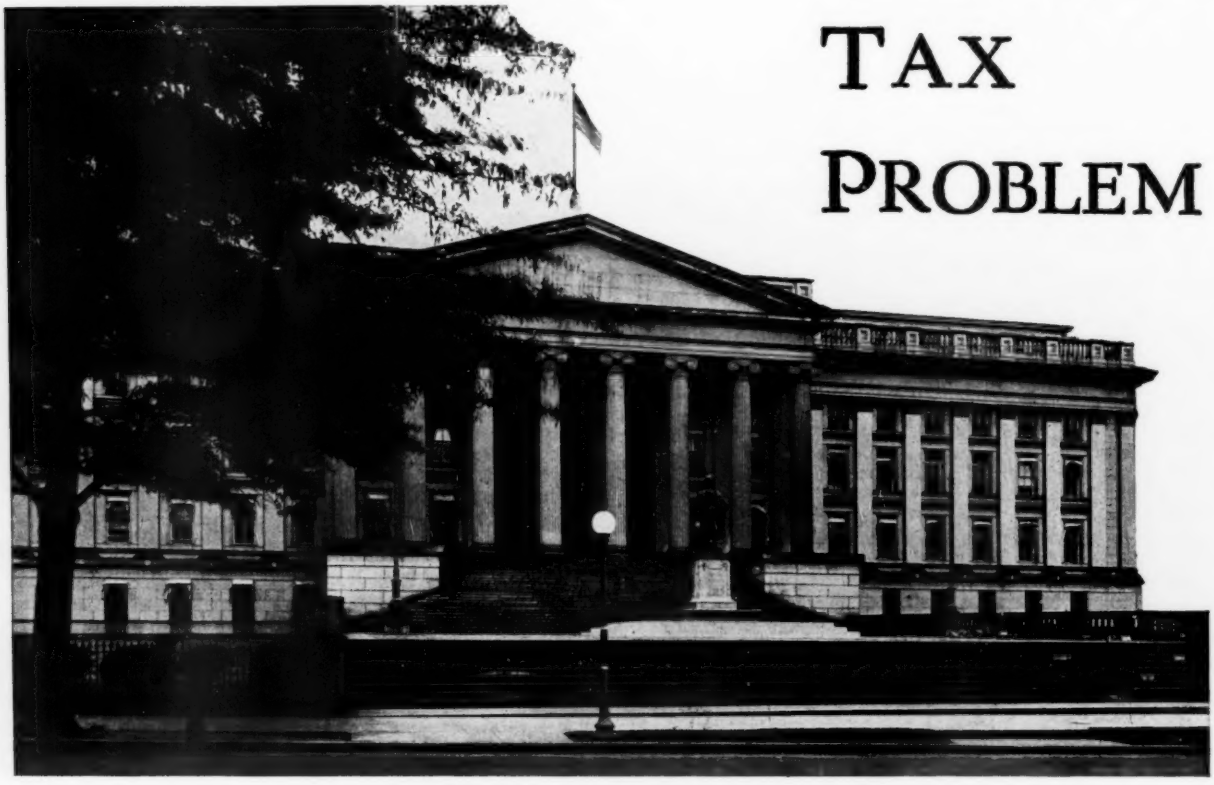
ANNOUNCEMENT has just been made of the dates for the Annual May Meeting of the Coal Division of The American Mining Congress, and it is of more than usual interest because of the more or less desperate plight of all industry, coal included. It demonstrates thoroughly the calibre of the coal industry. Undaunted by the inroads into markets made by competitive fuels, by lack of orders, by the difficulties of district competition, it will again assemble some several thousand strong to discuss, to learn, to see, to hear, all of the things that coal men themselves have developed to solve their problems, and help break Mr. Depression's back. The Convention—"as usual"—the Exposition—"as usual"—the Cooperative effort—"as usual". Cooperation, unity, forethought—the One real example of a great, widely flung industry, cooperating, exchanging information—this Convention and Exposition (the 10th Annual) have become the badge of progress, and every coal company, every coal man identified with it, wears the insigna of the Progressive. May 8 to 12 are important dates on the coal man's calendar.

THE EXPOSITION

THE COAL INDUSTRY has never shied at the term "technocracy." Instead, it has interpreted it to mean modernization, and has adopted that term as its slogan. Every year for the past ten consecutive years the manufacturers, who manufacture the equipment to mine coal, have staged a great national exposition during the period of the convention of coal operating men. Each year the industry has returned to its job enriched with new ideas gained, frequently, through equipment displayed at this exposition.

Coal men have been anxious to learn about this year's meeting; they want to send their men to the convention and exposition; they want to be assured that the equipment companies are cooperating with them in their effort to get out of the red. The answer is, that the Exposition will be as interesting, as comprehensive, as educational as have been its predecessors. Everything will be shown from blasting powder to the very latest equipment. Supplementing the special session on the "New Things in Coal Mining" will be an exhibit of those new things. Already 73 companies have agreed to exhibit. Attendance of operating officials will be repaid many fold. These expositions have proved themselves great educational institutions. Combined with the convention, they contribute immeasurably to coal mine progress. Full advantage of the opportunities afforded should be utilized.

INDUSTRY and the FEDERAL TAX PROBLEM



by HONORABLE ARTHUR A. BALLANTINE*

THERE IS NO DOUBT that these are critical times, and in that connection no one regrets more than the officials of the Treasury what your chairman has said about the taxable status of the mining industry at the present time. It reminds me of that historic gentleman looking in a dark room for a black cat that is not there. However, we feel some confidence that other days are coming for this industry.

The time was, of course, when the concern of every industry was as to how tax matters affected it and its own interest. They had an idea that in some way the needs of the Government for revenue would be taken care of, providentially or automatically. But today the real concern of each industry and of our business men generally has to be with the general phases of the Federal revenue problem. If the needs for revenue and for sound Government finance are not met, no industry finds itself with a sound foundation for its own activities and development. So I have come here this morning with the view of saying something to you, not about any problem that affects the mining industry differently from other industries, but to say a word about the general revenue and financing problem which the Government faces.

Now, the annual report which the Secretary of the Treasury submitted to Congress when it convened last week shows that the estimated deficit for the coming fiscal year which begins on July 1, 1933, will be $307,000,000. That $307,000,000 is a figure which does not take into account any expenditure for reduction of the public debt in accordance with the sinking fund requirements. That figure of $307,000,000 for the deficit can only be attained if there are drastic economies by the Government. And I think it is very important that that situation be understood.

WHEN THE BUDGET was made up this year, all department and bureau heads, by express instruction of the President, intensively went over what they would be required to expend for their activities after eliminating every possible item that was not entirely and clearly necessary—and after that was done certain large further reductions were recommended by the President in his budget message. It included a further reduction in the pay of Federal employes. As you know, by the Economy Act of last year the pay of Federal employes was in effect through the application of the furlough provision, reduced 8 1/3 percent. Of course, when the budget was made for this year, it was clear that the furlough provision should be retained. But beyond that, the President has recommended that there be an additional 11 percent reduction in the pay of employes so that a further saving would be effected in the sum of $57,000,000.

Then there was the great item of the expenditures for veterans. That item is, of course, a major item in the Federal budget. It amounts to very nearly 25 percent of the total Federal expenditures and reaches a figure which is more than the entire cost of operating the Government as the cost was before the war. Now that item is taken hold of in the President's recommendation and detailed suggestions are made for cutting it down by a total amount of something like $127,000,000. Out of a total of almost a billion dollars, that perhaps does not seem drastic, but it is a turning point. In the normal course of events the expenditures for veterans will simply increase, because more and more veterans apply for and get disability allowances. The changes proposed would effect a very substantial saving by eliminating the most extreme forms of generosity which have been extended toward the veterans. There is no thought, of course, of refraining from the most liberal provisions

* *Under Secretary of the Treasury. Before the annual meeting of the American Mining Congress, Washington, D. C., December* 16, 1932.

for veterans who have any claim upon the protection of the Government. Those claims will be amply met. This is just a paring down of the extreme provisions which it is clear the people of this country as a whole can not possibly afford. It is a vital item of reduction.

Then there is the reduction in expenditures for public construction. They have, of course, been very much increased as a measure of relief, but we have got to the point where budget demands are such that it could be curtailed. When all those economies are effected, we have this final result of a deficit of $307,000,000 for the next fiscal year. That, of course, rests upon certain revenue assumptions of which I may speak briefly.

NOW, YOU MAY, I think, ask how the Federal Government's budget has come to be in this condition. The emergency has had a double adverse effect on the Government's financial situation. It is unlike a business concern. The Government finds itself with the necessity of increasing its expenditures to meet relief needs. It also finds itself with diminished revenue, so we have this double effect—expenditures going up, revenues going down. When we compare these effects we find that expenditures in the fiscal year 1932 reached the appalling figure of slightly more than $5,000,000,000. Now the bulk of the increase shown by that figure over such a year as 1929, which was the last year substantially unaffected by emergency conditions, an increase something like a billion one hundred million or a billion two hundred million occurred through emergency expenditures, such as $500,000,000 expended for the capital stock of the Reconstruction Finance Corporation, which was treated as an ordinary operating item; $125,000,000 for additional capital stock of the Federal Land Banks; $136,000,000 for net loans under the agricultural marketing act; an increase of about $306,000,000 in expenditures for public works; and an increase of $117,000,000 in the postal deficit. You can go through these items and add them up and there is more than enough to account for the increase in expenditures. This affected Government expenditures due to emergency conditions.

Now, if you turn to the other side—that is, the revenue side—and see the effect of the emergency on the revenues, you will see that receipts from income taxes in the fiscal year 1932 amounted to $1,057,000,000. That compares with collections of $1,860,000,000 in 1931, or a decline of $803,000,000 from 1931 to 1932, and with collections of $2,411,000,000 in the fiscal year 1930, so that the income tax revenue of the Government for 1932 showed a decline of $1,354,000,000 as compared with 1930.

Corporation income taxes collected in the full calendar year 1932, on incomes for 1931, will aggregate about $372,000,000, which is about one-third of the amount collected on 1928 incomes. One-third in the case of corporation taxes. In the case of individual income taxes, amounts collected in 1932 on incomes for 1931 will aggregate about $250,000,000. That is only about one-fifth of the amount that was collected on 1928 incomes. Of course, in the case of individual income taxes you have to take into consideration the reduction of the income and the effect of the rate from higher brackets to lower brackets. Furthermore, in the case of individuals the losses on security dealings add a very much more marked effect.

THE REPORT OF THE SECRETARY, which I commend to you, shows that in the year 1931 losses on security transactions went ahead of the gains. While if we go back to 1928 we find security dealings showing upwards of $4,000,000,000 of net profits in excess of losses subject to the individual income tax; in 1931 we find a deficiency of some $600,000,000; that is, losses exceeded the gains by that amount.

So you have had this terrific drop in an important source of taxable income. Of course, that doesn't come under the heading of news to you, but it is interesting to see just what the figures are in the large.

On the individual incomes, two-thirds of the decline of $897,000,000 in collections on 1931 incomes as compared with 1928 occurred in income classes of $100,000 or over and the number of income payers in that class declined from 16,000 in 1928 to approximately 3,000 in 1931. There will be a further decline in 1932, of course.

Now something about what I have been saying with regard to reduction in the Federal revenues. The increase in expenditures is, of course, checked very much for this year; expenditures for this year—expenditures for 1933 of the Federal Government is something like $4,269,000,000, as compared with the total of about $5,000,000,000 of last year, so that already in this year we have a check; but the great objective for the next year is to make this further reduction in Federal expenditures of something like $500,000,000 net.

Now Congress needs support even in these times in an effort to effect that reduction. That reduction does not come easily. Reducing the pay further of Federal employes is not an easy matter. There is a great deal to be said about it. It is a regrettable thing to have to do, but it is necessary that it should be done under the present circumstances, but a Congressman needs some moral support in doing that. Reducing veterans' allowance, even where they have clearly no justifiable claim, is not an easy thing to do. Everybody feels grateful and friendly to that class of citizens in the highest degree, and the members of Congress need moral support on this issue from the citizens all over the country, and the representatives of industry, when he has to tackle this very difficult problem, and I think all those who are concerned in the tax problem and in the tax future of our country should stand squarely behind Congress in this very important task.

REDUCTION IN FEDERAL EXPENDITURES, while it is absolutely vital, is hardly likely to be sufficient to put the Federal budget in a satisfactory condition—in the condition in which it ought to be to sustain the credit of the Government. Now, as I see it, the first objective of drastic economy is this deficit of $307,000,000. Now we ought not to rest pleasantly under that deficit. That ought to be altogether eliminated for the coming year. And furthermore, we ought to make some margin of safety in the revenues which are to be collected. To be sure, there are about $329,000,000 of payments from foreign governments under their debt agreements. It does not look probable that those payments will be received in full. And then, so far as they are not, the deficit will be increased. So with a deficit there anyway, and with the prospect of some loss of those payments and, of course, always with the question of what possible income will be, the sound and advisable course for the protection of the financial integrity of the Government is to make provision of additional revenues.

When we turn to that we, of course, face the fact that last year, when Congress made a very serious effort along this line, it was effecting a very sharp increase in income tax rates. The maximum normal tax of 8 percent and the maximum surtax of 55 percent reached the maximum of 63 percent, which certainly puts the high income taxpayer on very nearly a war-time basis. Estate taxes were very greatly increased, so that there we have a maximum combined rate of 45 percent. And a heavy gift tax was imposed to protect the estate taxes so that those great sources of taxation were certainly fully covered by the increases which have already been made, and it is perfectly apparent that increase in the rates along those lines is not calculated in any way to help the revenue. We have rates now which are too high from nearly every revenue standpoint.

Congress last year imposed a large group of miscellaneous taxes. They included some unimportant taxes and some which are very substantially important, such as the tax on checks and the tax on gasoline. These taxes have been of great help to the revenue, and have added as of December 10 $112,000,000 to the total yield of miscellaneous internal revenue. Receipts from this source, as I remember, roughly amount to some $356,000,000 in this fiscal year, as compared with receipts of some $245,000,000 for the corresponding period last year. That is a very substantial addition.

BUT WHEN YOU GOT all through those taxes, it is apparent that adequate provision has not been made, and therefore the Secretary of the Treasury in his latest

(*Continued on page 38*)

MINING EVENTS

Silver

SILVER UNQUESTIONABLY cornered the national limelight, so far as metals are concerned. In addition to being the subject of extensive discussion by congressional groups, it has figured in the national news and been included in the utterances of most speakers of importance. President Hoover led the procession, and was followed by leading economists and industrial leaders. Meantime, the silver industry languished.

Senator Key Pittman, of Nevada, in explaining the bill he introduced in the Senate which would authorize the President to accept from Great Britain silver not to exceed $100,000,000 in value at the market price of silver (not to exceed 45 cents per ounce) at the time of acceptance as a payment upon the British war debt, said in part as follows:

"The Government of India owes Great Britain approximately $85,000,000. It has been reported with some authority that the Government of India is desirous of paying this debt to Great Britain with silver. The acceptance by the United States of $74,950,000 worth of silver at the world market price of silver of approximately 25 cents an ounce, which is probably lower than it ever will be again, would not only be profitable to the United States but advantageous both to the United States and Great Britain.

"Under such a settlement the United States would receive 299,800,000 ozs. of silver at the present market price of around 25 cents an ounce. Under the provisions of the bill our Government out of such silver would coin 74,950,000 standard silver dollars. It would deposit such standard silver dollars in the Treasury, and issue and circulate against them $74,950,000 in silver certificates similar to those now in circulation in the United States.

"As it requires only seventy-eight one-hundredths of an ounce of silver in the coinage of standard silver dollars, there would remain therefore in the Treasury, in addition to such 74,950,000 standard silver dollars, 241,339,000 ounces of silver to be held in the Treasury as additional security for the maintenance of a parity of the silver certificates so issued.

"The issuance of $74,950,000 in silver certificates would not overbalance our silver currency as against our gold currency in circulation. In fact, even with this addition, our silver currency in circulation in the United States would be proportionately less to gold than it was in 1913."

Copper

FROM REPORTS along the line, it would seem that there is a brighter outlook for copper, although there is but little evidence to bear out the optimism, other than that commercial stocks are almost at the low point, and with any demand will start production.

The foreign situation is reported as "more encouraging," and financial papers state that foreign producers believe that the low-cost producers in America are striving to prevent an advance in the price of copper. Their object is assumed to be to hasten the closing down of high-cost mines.

All now agree that the tone of the market is decidedly firmer than it has been for a long time. Consumers are about ready to begin buying, and as they have hardly any copper in stock, good-sized purchases are expected.

The tendency for copper to accumulate in British warehouses seems to have ceased. In January the amount of refined in warehouses increased 40 tons and of rough decreased 226 tons, the total of both at the end of the month being 36,478 tons, a net decrease of 186 tons.

So much electrification is under way that Europe's consumption of copper is quite certain to increase much more rapidly in the future than in the past. The outlook is favorable to an increase of consumption this year.

Robert P. Lamont, former Secretary of Commerce, and now president of the American Iron and Steel Institute, believes that some relaxation of the anti-trust laws is essential to the recovery of the metal (particularly copper) industries. He states that:

> "United States copper producers are beginning to feel that, with output in step with consumption, a tariff of 4 cents a pound to protect their market, stocks of the metal in strong hands and accumulated at costs much higher than the present market, they should stop selling copper so far below the cost of production and begin to lay the foundations for getting a much fairer price as soon as domestic consumption begins to improve consistently.
>
> "Fear of the Sherman Anti-Trust Act has restrained them somewhat, but the opinion is being more widely held that production is not commerce under the interpretations of that act, and that anyway nothing in the law of this country can compel suicidal competition. Consequently the belief is growing that producers may cooperate until the price is up to production cost and even higher, so long as agreements are limited to output without reference to price and ample copper is kept available to consumers for meeting the nation's requirements."

ACCORDING to the Bureau of Mines, smelter output of copper from ores of domestic origin in 1932 was about one-half that of 1931, and refinery production from domestic and foreign sources was 54 percent lower than in 1931. The severe cut in production is evidence of the efforts made by producers to bring production into balance with consumption. The smelter production of copper from domestic ores in 1932, from reports of the smelters showing actual production for 11 months and estimated production for December, was 528,000,000 lbs., compared with 1,043,000,000 lbs. in 1931. The 1932 production was thus about one-half that of 1931; it was the smallest production recorded since 1921, exceeding the output of the latter year by only 4 percent. The estimated smelter production from domestic ores for December as reported by the smelters was nearly 45,000,000 lbs., which is slightly higher than the average reported for the 11 months preceding.

The production of new refined copper from domestic sources, determined in the same manner as smelter production, was about 443,000,000 lbs., compared with 1,075,000,000 pounds in 1931. The output of new refined copper from domestic and foreign sources in 1932 amounted to about 688,000,000 lbs., compared with 1,502,000,000 lbs. in 1931—a decrease of 814,000,000 lbs. or 54 percent. The production of secondary copper by primary refineries dropped from 156,000,000 lbs. in 1931 to about 120,000,000 lbs. in 1932. Thus the total primary and secondary output of copper by the refineries in 1932 was 51 percent below the preceding year—a production of about 808,000,000 lbs. being reported for 1932 as compared with 1,658,000,000 lbs in 1931.

The imports of unmanufactured copper during the first 11 months of 1932, according to the Bureau of Foreign and Domestic Commerce, amounted to 371,089,938 lbs., or at a monthly rate of nearly 34,000,000 lbs. This compares with total imports of 585,892,098 lbs. for the entire year 1931, or at a monthly rate of 49,000,000 lbs. Imports in November, 1932, totaled only 10,000,000 lbs. The total imports for 1932 will very likely show a decrease of approximately 208,000,000 lbs. for the year, or a drop of about 35 percent.

In the following table imports of copper into the United States for January 1

to June 20 and for June 21 to November 30, 1932, are shown.

Copper Imported Into the United States in 1932, in Pounds

	Jan. 1-June 20	June 21-Nov. 30
Ore (copper content)	8,441,374	4,798,313
Concentrates (copper content)	32,488,533	10,433,506
Regulus, black or cement copper (copper content)	1,133,373	294,510
Unrefined black blister	98,294,227	46,236,835
Refined in ingots, bars, etc	163,978,797	2,472,226
Old and scrap	2,421,920	56,430

The exports of metallic copper during the first 11 months of 1932 amounted to 305,177,405 pounds as compared with 557,574,235 pounds exported during the entire year 1931. Total smelter and refinery stocks at the end of 1932 were 1,368,000,000 pounds, representing an increase of 95,400,000 pounds, or 7 percent over the previous record stocks at the end of 1931.

The quantity of new refined copper withdrawn on domestic account during the year was about 527,000,000 pounds, compared with 902,000,000 pounds in 1931, a decrease of 375,000,000 pounds or 42 percent.

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Iron

FRANKLIN G. PARDEE, of the Michigan State Geological Survey, in a paper presented before the American Institute of Mining Engineers, presents some interesting statistics upon the future of iron mining in the Lake Superior District:

> "In 1920 the Minnesota Tax Commission estimated a reserve of 1,341,674,538 long tons of iron ore in Minnesota, the Michigan State Tax Commission report showed 199,092,855 long tons in reserve in that state, and the Wisconsin Geological Survey set the Wisconsin reserves at 21,500,000 long tons. The total reserve that year for the Lake Superior District amounted to 1,562,267,393 long tons. Ten years later the reserves of iron ore in these same districts were: Minnesota 1,235,227,510, Michigan 168,349,823, and Wisconsin 23,000,000, or a total of 1,426,577,333 long tons.
>
> "The decrease in ore reserves in this ten-year period was 135,690,060 long tons, but the shipments were 520,746,975 long tons. In other words, the ten-year depletion in reserves was only 8.68 percent. If similar conditions carry into the future this calculation would indicate a life for the ore reserves of the Lake Superior region of over 100 years.
>
> "It would not be correct at this point to fail to call attention to the fact that the estimates just cited were made for tax purposes and cannot be compared with estimates of total reserves which include possibilities that are too remote and intangible to be included with those reserves on which taxes are levied. It is also necessary to bring out the fact that this calculation covered a period of more than ordinary development activity at the iron mines. Obviously most of the easy discoveries and inexpensive developments of iron ore have been made and the future probably will not offer an opportunity for large increases in reserves.
>
> "To estimate the future life of a large mining district, or what it practically amounts to in this case, to predict the future of an industry which is national in its scope, involves so many other things besides ore reserves and production of raw material that to neglect these other factors is to entirely disregard essential facts. The future of any industry is always in doubt, but the best that can be done at any one time is to examine some of the results of past conditions, determine what forces are active at present, and then point out, if possible, the trend or direction in which these forces are working."

According to the Bureau of Mines the iron ore mined in the United States in 1932, exclusive of ore that contained 5 percent or more of manganese in the natural state, is estimated at 9,588,000 gross tons, a decrease of 69 percent as compared with that mined in 1931. The output in 1932 is the lowest since 1885. The ore shipped from the mines in 1932 is estimated at 5,364,000 gross tons, valued at $13,042,000, a decrease of 81 percent in quantity and of 82 percent in total value as compared with the figures for 1931. The average value of the ore per gross ton at the mines in 1932 is estimated at $2.43; in 1931 it was $2.60. The stocks of iron ore at the mines, mainly in Michigan and Minnesota, apparently increased 33 percent from 13,063,708 gross tons in 1931 to 17,316,000 tons in 1932. The stocks at the end of 1932 are the largest ever accumulated at the mines.

Lake Superior District

Only 67 percent of the iron ore shipped in 1932 came from the Lake Superior district, in which approximately 7,882,000 gross tons was mined and 3,614,000 tons was shipped, decreases of 70 and 84 percent, respectively, as compared with the quantities mined and shipped in 1931. The ore shipped in 1932 was valued at the mines at $10,081,000, a decrease of 84 percent. These totals include the ore shipped by rail as well as by water from all mines, but exclude manganiferous ores amounting to approximately 11,000 gross tons in 1932 and 246,136 tons in 1931 that contained 5 percent or more of manganese in the natural state. The stocks of iron ore in this district apparently increased from 11,821,646 gross tons in 1931 to 16,120,000 tons in 1932, or 36 percent. The shipments of iron ore by water from the Lake Superior district in 1932 (including manganiferous iron ores), according to the Lake Superior Iron Ore Association, amounted to 3,567,985 gross tons, a decrease of 85 percent as compared with these shipments in 1931. The average value of the ore at the mines in the Lake Superior district in 1932 was $2.79 a ton; in 1931 it was $2.74.

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Lead and Zinc

CONSIDERABLE CONCERN is apparent in the Zinc districts in relation to the policy of the new administration on the tariff. Zinc, more than most minerals, is dependent upon protection for its prosperity. Without such protection as that afforded in the Smoot-Hawley Bill whole districts must be closed down.

The uncertain situation in relation to the tariff, coupled with the present stagnant business condition, has kept production at a low ebb. The American Metal Market in a recent analysis of the zinc situation says:

> The recent decline in the zinc market from 3.12½c E. St. Louis at the begininng of January to around 2.62½c has been attributed to three major causes:
>
> 1—Conversion of large quantities of surplus stocks of concentrates into Prime Western zinc, with a resulting increase in the stocks of refined zinc.
>
> 2—Slight increase in mine production induced by price advance and larger demands and deliveries late last summer.
>
> 3—Abnormally small buying and abnormally small deliveries into consumption during the last few months.
>
> The statistical position of zinc has undergone some deterioration if only the metal stocks are considered such stocks at the end of January having been reported as 129,524 tons as compared with 121,798 tons at the end of last November, but on the other hand there has been a substantial reduction in the surplus stocks of zinc concentrates in the Tri-state region. These stocks of concentrates, which at the end of November were estimated at 43,000 tons, had been reduced to 25,000 tons at the end of January. On the basis of 60 percent content and 88 percent recovery, the metal equivalent of the ore stocks decreased 9,500 tons during the last two months as compared with an increase of 7,800 tons in refined metal.
>
> Comparative figures of the present stocks of refined zinc, plus the recoverable zinc content of the surplus ore, and those of a year ago, are now presented:

	Jan. 31, 1933	Jan. 31, 1932
Refined zinc	129,524	129,909
Recoverable metal contents of concentrates *	13,200	45,600
Total stock	142,724	175,509

> * Zinc content figured at 60 percent with 88 percent recovery.

The American Bureau of Metal Statistics recently presented a table showing 1932 production of lead for the various important nations.

The following table gives, in short tons, 1932 production for the various important nations that are sources of lead, allocated so far as possible to country of origin of the ore; also output for each of the last four months in 1932.

	Sept.	Oct.	Nov.	Dec.	Jan.-Dec.
United States	20,498	21,092	24,465	21,638	286,422
Canada	10,428	11,995	12,128	12,216	137,179
Mexico	11,775	14,223	9,148	7,284	143,758
Germany	8,815	11,016	10,758	11,243	106,079
Italy	2,815	2,856	2,916	3,284	31,700
Spain and Tunis	8,976	9,633	9,387	10,015	133,910
* Europe, n. e. s.	12,600	12,600	† 9,900	10,300	146,600
Australia	14,326	15,040	15,288	17,183	196,158
Burma	6,653	6,653	6,653	6,675	79,748
* Elsewhere	2,800	3,700	3,400	4,000	30,500
World's total	99,686	108,808	† 104,043	103,838	1,292,074
United States	20,498	21,092	24,465	21,638	286,442
Elsewhere	79,188	87,716	† 79,578	82,200	1,005,632

* Estimated or partly estimated. † Revised.

FIGURES SHOWING the smelter and refinery output of lead and zinc in the United States in 1932 were issued recently by the United States Bureau of Mines. The output of primary refined lead from domestic sources in 1932 was 254,000 tons, and from domestic and foreign sources 287,000 tons. The smelter output of primary zinc from domestic ores in 1932 was 207,000 tons, and no output was reported from foreign ores.

The recoverable lead contained in ore mined in the United States in 1932 was about 28 percent below that in 1931. Missouri was the largest lead-producing state, as usual, and had the largest tonnage decrease in 1932. It was followed in order of importance by Idaho and Utah, which also had the next largest tonnage decreases. Although the largest decreases in tonnage were recorded by the principal producing states, by far the largest proportionate decreases were shown by the smaller lead-producing states. Output in Missouri declined 27 percent; Idaho, 29 percent; Utah, 23 percent; New Mexico, 4 percent; and Oklahoma, 30 percent. Output in Kansas was relatively the same as in 1931. In Nevada production was 92 percent lower than in 1931; and in Montana and Colorado, output declined 73 and 70 percent, respectively. The production for Western States decreased 30 percent, for Central States 26 percent, and for Eastern States 39 percent.

The recoverable zinc contained in ore mined in the United States in 1932 was 31 percent less than that reported for 1931. New Jersey was the principal producing state, with an output that represented 29 percent of the total for the country. Oklahoma ranked second and Utah third. The largest decreases in tonnage were recorded by Tennessee and Virginia combined, Colorado, Kansas, Oklahoma, and New Jersey. Of the important zinc-producing states, Tennessee and Virginia together declined 50 percent in 1932; Kansas, 39 percent; Utah, 22 percent; Oklahoma, 18 percent; New Jersey, 13 percent; and New Mexico, 9 percent. Zinc output in Colorado and Nevada declined 99 and 95 percent, respectively. Taken as a group, the Eastern States recorded a decrease in production of 25 percent, the Central States 26 percent, and the Western States 43 percent.

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Gold

GOLD REMAINED the most prosperous of the metals, setting a new record in its 1932 production. The Bureau of Mines announces that there is a steadily increasing interest in small-scale gold mining, estimating that from fifty to seventy-five thousand young men have deserted city life for the shovel and the sluice box.

This revival of interest in gold mining is evidenced by thousands of requests received by the United States Bureau of Mines for information regarding methods and equipment for developing and operating gold placer deposits and vein or lode deposits.

Placer-mining schools have been conducted in western states, and the idea has grown current that a day or two of instruction in panning will pave the way to good wages working the streams. Some of these schools have been well staffed, and have been planned in a public-spirited desire to alleviate unemployment; others do not have the facilities for instruction which they claim to possess.

The Bureau of Mines has sought to render real service to those who ask its aid. Without wishing to understate a man's chances, and fully realizing that any new gold contributed to circulation will be a benefit, the Bureau believes that the greatest assistance to the interested public will be rendered by an accurate statement relative to the existing situation.

Two papers on gold mining recently issued by the Bureau of Mines were in such immediate demand that complete editions were exhausted one month after publication. The first one on "Small-Scale Placer-Mining Methods" was issued in April, 1932, as Information Circular 6611, for the benefit of the small-scale operator, experienced prospector, and inexperienced people, thousands of whom have turned to placer mining in the absence of other means of employment. This circular includes maps of 16 states showing regions from which placer gold has been authentically reported as having been recovered. Small-scale methods of operating were described and illustrated. The first edition of 2,700 copies was quickly absorbed and the demand was so great that a second edition of 2,000 copies was printed in June, and by the time it was ready for distribution requests for more than this number had been received. The demand continues, and 2,000 more copies are being printed.

PRODUCTION OF NEW GOLD from mines throughout the world reached a new high record during 1932 of 23,911,000 fine ounces, valued at $494,240,370, according to the American Bureau of Metal Statistics.

The bureau points out that, in addition to the new gold produced, the "increment to the world's supply of monetary gold has been augmented by the unlocking of hoards in India, Great Britain, and Russia to an amount approaching the 1932 production of new gold." Absorption of gold in British India between 1873 and 1931 is estimated, in a report of the Royal Mint in London, at between £500,000,000 and £600,000,000.

Production of the South African gold fields, the major gold producing area, made a series of new high records during 1932. Total output for the year is placed at 11,566,000 fine ounces, valued at $239,069,220, compared with 10,878,000 fine ounces in 1931, valued at $224,848,260. After the record for monthly production had been set in August at 991,000 fine ounces, there was a drop to 962,000 ounces in September. Since then, however, output has gained each month until 980,000 was reported in December.

The output from mines in the United States increased during 1932 to 2,513,000 fine ounces, valued at $51,943,710, compared with 2,396,000 ounces, valued at $49,525,320, in 1931. Canadian production, too, advanced to 3,055,000 fine ounces in 1932, valued at $63,146,850, from 2,694,000 fine ounces, or $55,684,980, in 1931. Production in Russia increased during the year to 1,900,000 ounces from 1,600,000 in 1931. The estimate here given has been verified officially in Russia.

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Sulphur Industry in 1932

THE OUTPUT of sulphur in the United States in 1932 dropped to less than one-half of the quantity produced in 1931. Shipments and exports showed smaller decreases than production, and stocks were reduced.

Sulphur production amounted to 889,695 long tons in 1932, a decrease of 58 per cent, compared with the output in 1931 of 2,128,930 tons. The amount produced in 1932 was 1,669,286 tons, or 65 per cent, less than that reported in 1930, the record year. Shipments declined from 1,376,526 tons, valued at about $24,800,000 in 1931, to 1,108,112 tons, valued at about $19,900,000 in 1932, or over 19 per cent in both quantity and

value. Stocks at the mines on December 31, 1932, had decreased to 3,031,000 tons, or 219,000 tons below the record reserve at the close of the preceding year.

Most of the output in 1932 was mined in Texas, and from this State has come virtually all of the production of recent years. Texas produced 876,294 tons of sulphur in 1932, or 98 per cent of the country's total.

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The National Safety Competition for Mines

METAL-MINING COMPANIES and coal-mining companies represented in the Mining Section of the National Safety Council are invited to enroll in the 1933 National Safety Competition conducted by the United States Bureau of Mines. Four trophies will be awarded at the close of the year to the metal mine, the bituminous-coal mine, the anthracite mine and the non-metallic mine having the lowest accident-severity rate as determined by accident reports to the Bureau of Mines. Ask the Bureau of Mines, Washington, D. C., for an enrollment blank. Win the "Sentinels of Safety" trophy this year!

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Manganese Ore Industry In 1932

SHIPMENTS OF MANGANESE ORE containing 35 per cent or more of metallic manganese from domestic mines (exclusive of Puerto Rico) in 1932 were approximately 17,000 gross tons, valued at $357,000, compared with 39,242 tons, valued at $699,121, in 1931. The shipments in 1932 were the lowest since 1922. The shipments of metallurgical and miscellaneous ores in 1932 amounted to about 10,500 gross tons, valued at $135,000, compared with 31,290 tons, valued at $417,598, in 1931. Battery ore shipments decreased from 7,952 gross tons, valued at $281,523 in 1931, to about 6,500 tons, valued at $222,000, in 1932. Shipments of manganese ore from Puerto Rico to the United States during the 11 months ended November 30, 1932, were 2,152 gross tons, valued at $61,809, compared with shipments for the entire year 1931 of 2,374 tons, valued at $87,356.

Manganese ore was reported shipped from Alabama, Arkansas, Georgia, Montana and Virginia in 1932. Montana furnished 88 per cent of the total shipments.

The imports of manganese ore for the 11 months ended November 30, 1932, amounted to 106,418 gross tons, containing 51,318 tons of metallic manganese during the entire year 1931. Of the ore imported in 1932, 55,437 tons were from Soviet Russia, 24,592 tons were from British West Africa (Gold Coast), and 21,500 tons were from Brazil.

The production of steel in 1932 was about 13,500,000 gross tons, in comparison with 25,945,501 tons in 1931, which accounts for the decreased demand for ferromanganese and in turn for manganese ore during the past year. The production of ferromanganese in 1932 is reported by the Iron Age at 57,342 tons; the production reported to the Bureau of Mines in 1931 was 166,937 tons.

Shipments of domestic ore containing from 10 to 35 per cent of manganese (ferruginous manganese ore) in 1932 were about 16,000 gross tons, valued at approximately $62,000, compared with 64,062 tons, valued at $405,749, in 1931. The ferruginous manganese ore shipped in 1932 was from Alabama, Arkansas, Georgia and Minnesota.

The domestic shipments of ore containing 5 to 10 per cent of manganese (manganiferous iron ore) in 1932 were 9,582 tons, valued at $29,426, compared with 217,352 tons, valued at $570,800, in 1931. All the manganiferous iron ore shipped in 1932 was from Michigan.

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California Association Will Seek Changes in State's Corporate Securities Act

ASSOCIATION FOR the Amendment of California's Corporate Securities Act has filed articles with the Secretary of State at Sacramento. It will work with other similar organizations in the northern part of the State to bring about modifications of the present "Blue Sky" law, to the end that unnecessary restrictions be removed from those engaged in development of natural resources and all other industrial opportunities in the States.

While details of the association's campaign have not yet been fully worked out, it is probable that an effort will be made to substitute the Securities and Fraudulent Practices acts of Colorado for the present State law. In that event, administration would be shifted to the Attorney General and Secretary of State, thus eliminating the cost of the present separate corporation department with a saving of several hundred thousand dollars annually in direct and special levies upon the taxpayers of the State. Educational information, dealing with the protective laws of this and other States, will be broadcast, public meetings will be held in all parts of the State and every effort made to marshal facts for the guidance of the legislature.

The first directors of the association are C. Colcock Jones, A. E. Place and Edward W. Brooks, mining engineers; A. D. Myers, practical mining man, well known as the discoverer of Goldfield, and Sidney Norman, journalist, who will act as Secretary-manager.

Rex B. Goodcell, former Superior Court Judge and candidate for Governor on the Republican primary ticket in 1926, and Ben L. Blue have been retained as counsel for the association. Offices have been opened at 1219 Transamerica Building, Seventh and Olive Streets, where enrollment is proceeding. There are no special qualifications for membership, except sympathy with the objects of the association, which will be supported by voluntary donations.

Digest of Mineral Products of the United States, 1930 and 1931

Product	1930 Quantity	1930 Value	1931 Quantity	1931 Value
Metallic				
Aluminum ..... pounds..	229,035,000	$50,961,000	177,544,000	$37,284,000
Antimony ..... (2,000 lbs.)..	1,685	258,500	964	129,600
Bauxite..... (2,240 lbs.)..	330,612	1,928,297	195,895	1,140,629
Chromite ..... long tons..	80	1,905	268	3,509
Copper ..... pounds..	1,394,389,327	181,271,000	1,042,711,178	94,887,000
Ferro-alloys ..... long tons..	650,240	51,900,220	398,295	30,764,549
Gold ..... troy ounces..	2,285,603	47,247,600	2,395,878	49,527,200
Iron ore..... long tons..	55,201,221	145,619,059	28,516,032	74,123,910
Lead (refined)..... short tons..	573,740	57,374,000	390,260	28,879,000
Manganese ore..... long tons..	67,035	1,437,465	39,242	699,121
Manganiferous ore... long tons..	785,390	2,401,605	281,414	976,549
Mercury ... flasks (76 lbs. net)..	21,553	2,478,789	24,947	2,179,145
Nickel ..... short tons..	308	213,803	373	202,406
Platinum ..... troy ounces..	43,502	2,048,824	36,205	1,274,029
Silver ..... do....	50,748,127	19,538,029	30,932,050	8,970,294
Tin (metallic equivalent) short tons..	17	10,500	4	2,050
Tungsten ore (60% concentrates) ..... do....	702	509,000	1,404	928,000
Zinc ..... do....	489,361	46,979,000	291,996	22,192,000
Nonmetallic				
Arsenious oxide... short tons..	17,425	1,008,385	13,777	796,744
Asbestos ..... do....	4,242	289,284	3,228	118,967
Asphalt, native..... do....	702,777	4,463,092	503,383	2,930,451
Asphalt, oil..... do....	2,273,546	21,570,439	2,200,337	16,539,894
Barite (crude)..... do....	234,932	1,538,171	174,520	994,655
Coal, bituminous..... do....	467,526,299	795,483,000	378,110,000	615,000,000
Coal, anthracite..... long tons..	61,950,747	354,574,191	53,153,000	304,203,000
Coke ..... short tons..	47,972,021	209,137,262	33,483,886	161,608,724
Feldspar (crude)... long tons..	171,788	1,066,636	147,119	861,059
Fluorspar ..... short tons..	95,849	1,746,643	53,484	931,275
Gypsum ..... do....	3,471,393	27,051,484	2,559,017	20,801,357
Lime ..... do....	3,387,880	25,616,486	2,710,000	18,506,000
Magnesite (crude)..... do....	129,320	1,033,130	73,602	499,239
Mica, sheet..... pounds..	1,465,485	177,307	962,953	111,830
Zinc & lead pigments, short tons	147,948	18,420,436	123,963	15,225,300
Natural gas..... M cubic feet..	1,943,421,000	416,090,000	1,637,000,000	350,000,000
Natural gasoline..... gallons..	2,210,494,000	128,160,000	1,831,918,000	65,964,000
Petroleum... barrels (42 gal.)..	898,011,000	1,070,200,000	851,081,000	550,630,000
Pyrites ..... long tons..	347,512	1,028,680	330,848	974,820
Sulphur ..... do....	1,989,917	35,800,000	1,376,526	24,800,000

Accident-Prevention Record of the Metal-Mining Industry

FINAL FIGURES for the calendar year 1931 compiled by the United States Bureau of Mines, relating to accidents at metal mines and all other mines except coal mines in the United States show a 17 per cent advance in safety and accident-prevention work as compared with 1930. The ratio of accidents to the volume of work performed was 56.77 injuries and deaths per 1,000,000 man-hours of employment, the same figure for the previous year being 68.26. The figure for 1931 included a fatality rate of 1.01 and an injury rate of 55.76.

Reports covering 3,366 mines, large and small, showed that 80,940 men were employed at the mines in 1931 and that they worked 156,177,859 man-hours, an average of 1,930 hours per man. These figures reveal a decline of 22 per cent in the number of employes and 33 per cent in the aggregate number of hours worked by the industry as a whole. As compared with 1,930 hours of work by the average employe in 1931, the corresponding period of employment per man as estimated for the preceding year was 2,252.

Underground mining operations in 1931 employed 48,323 men who worked 91,099,469 man-hours and were characterized by a fatality rate of 1.60 and an injury rate of 74.80 per 1,000,000 man-hours of exposure to underground risks. Stripping and open-cut mining employed 10,113 men and the reports for this group showed 19,673,638 man-hours, with a per 1,000,000-hour fatality rate of 0.15 and an injury rate of 25.26. Surface shops and yards at the mines reported 22,504 employes and 45,404,752 man-hours of exposure, with a fatality rate of 0.20 and an injury rate of 30.79. These rates refer to all fatal accidents and to all non-fatal injuries that disabled an employe beyond the day on which the accident occurred.

Among the larger States—those in which 1,000 or more men were employed at the mines—the fewest accidents in proportion to the number of man-hours of exposure were reported by Minnesota, Tennessee, Alabama, Florida, Michigan, Alaska and South Dakota.

Note	Men employed: No. mines	Underground	Surface	Open-cut	Total	Total man-hours worked	No. killed	No. injured	Rates per million hours: Killed	Injured
A	223	12,602	5,278	1,807	19,687	41,019,314	51	2,580	1.24	62.90
B	2,514	15,878	7,697	768	24,343	48,632,722	58	3,825	1.19	78.65
C	201	11,868	5,464	4,454	21,786	39,121,025	28	774	.72	19.78
D	100	5,379	762	34	6,175	9,463,502	10	689	1.06	72.81
E	328	2,596	3,303	3,050	8,949	17,941,296	11	841	.61	46.88
Total.	3,366	48,323	22,504	10,113	80,940	156,177,859	158	8,709	1.01	55.76

NOTE: Kind of mine is indicated as follows: A, copper; B, gold, silver, and miscellaneous metal; C, iron; D, lead-and-zinc mines in the Mississippi Valley States; E, mines producing nonmetallic minerals.

Silver Discs to Be Sold to Finance State Exhibit

SALE OF 100,000 silver discs at $1 each was started in Denver and other Colorado cities and towns Thursday to finance a Colorado exhibit at the Century of Progress Exposition, which opens in Chicago in June.

Sale of the souvenir discs has been approved by the Denver Real Estate Exchange, the Chamber of Commerce, the Colorado Chapter of the American Mining Congress, the Colorado Alumni Chapter of the Colorado School of Mines and other organizations in various cities and towns.

Recently the 29th Colorado General Assembly adopted a resolution approving the plan and urging Coloradans to contribute as much as their means would permit.

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THE SIXTEENTH ANNUAL Convention of the Technical Section of the Explosive Department of the du Pont Company was held in Wilmington, Delaware, February 7, 8 and 9, with men present representing every coal district in the United States. In addition to the technical representatives specializing in coal, there were present men from the explosive laboratories, explosive manufacturing works, officials of the company, technical representatives specializing in other lines of explosives work and explosives experts representing the Canadian Industries, Ltd., of Montreal, Canada. Approximately 60 men, all engaged in the chemistry, manufacture or application of du Pont explosives, were present.

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THE STATE BUREAU of Mines and Mineral Resources of the New Mexico School of Mines has just received from the press Bulletin 9, "The Oil and Gas Resources of New Mexico," according to E. H. Wells, director of the Bureau. The author is Dean E. Winchester, consulting geologist of Denver, Colo.

According to Winchester, important undiscovered oil and gas pools should be present in New Mexico. In the Southeastern part these pools may be on structures not apparent at the surface or in formations below those so far tested with the drill. In the Northeastern part of the State deeper drilling is warranted at a number of places, and in the Northwestern part the deep Pennsylvanian rocks will probably be found to contain oil and gas at other structures besides the Rattlesnake dome. The Median area of the State, as defined in the report, and the Southwestern part in general are not favorable for oil and gas accumulations, but drilling may be justified in certain relatively small areas.

Carbon dioxide gas has been developed in important amounts in a number of wells in the Northeastern part of the State, and additional discoveries will probably be made. This gas is used in the manufacture of solid carbon dioxide or "dry ice," which has attained considerable importance recently as a refrigerant.

Winchester's bulletin discusses all of the proven oil and gas fields in moderate detail, and it also includes data on practically all of the other known structures. Production figures are given and many well logs and analyses of oil and gas are included. The structure and stratigraphy of the different parts of the State are considered and a chapter is devoted to geophysical prospecting.

The bulletin consists of 223 pages and 62 illustrations. Among the illustrations are an oil and gas map of the State, a geologic map of the State and 20 structure maps of known fields and areas of special importance. The oil and gas map shows the proven fields, the location of approximately 200 anti-clinal structures and the location and results obtained by drilling at nearly 1,000 wildcat wells. Copies of the bulletin can be obtained from the Bureau at Socorro, price $1.50.

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COAL

THE SUB-ZERO weather of late January and February pulled the coal industry, both bituminous and anthracite, out of an unparalleled mid-winter slump, and started production moving at a merry rate.

The anthracite group continues its fight against its competitors, and especially against Russian anthracite coal. The following resolution was adopted by the New York State Coal Merchants' Association:

"WHEREAS the importation into and sale of Russian coal in the United States the year one thousand nine hundred and thirty-two meant a loss of two million seven hundred thousand ($2,700,000) dollars in revenue to American producers, the enforced idleness of one thousand five hundred (1,500) American coal miners and four hundred (400) railway employes, as well as the loss in wages of one million six hundred thousand (1,600,000) dollars and the resulting loss of the domestic purchasing power of that amount of money, and

"WHEREAS in spite of the two dollars per ton import tax placed on such coal in June, 1932, by Congress as a deterrent to Soviet importation of foreign produced anthracite, the said importation of Russian anthracite during the past year amounted to two hundred seven thousand (207,000) tons, and on February 1, 1933, there were six loaded ships of Russian anthracite recently arrived in Boston har-

bor alone, and reported plans disclose preparations greatly to increase exports to this country, and

"WHEREAS because of complete governmental control of all industry in Russia, and the compelling motives of that country to secure American money, the Russian anthracite costs are in no wise a factor that control the selling price, and such anthracite can be sold at any price in America that will move the product, and

"WHEREAS the issuance of an embargo order against the importation of Russian anthracite by the Treasury Department is a legal measure and would stop this flow of Russian coal and provide work for those one thousand nine hundred (1,900) Americans now forced into the ranks of the unemployed: Therefore be it

"Resolved, That the New York State Coal Merchants' Association in convention assembled at Syracuse, New York, respectively urge the Secretary of the Treasury of the United States to issue an embargo order against the importation of Russian anthracite coal and the unfair competition of forced foreign labor with well-paid American labor, restore to American miners and railway employes the right to work and support their families, turn millions of dollars back into the channels of trade in America that make for prosperity and insure to the merchants and manufacturers the profits that such trade will mean.

Safety in Coal Mining in 1932

THE YEAR 1931 established a fine safety record in the coal mines of the United States. For the first 11 months of 1932, it appeared that the excellent accident rate of 1931 would be materially lowered. December, however, was a poor month in safe operation of coal mines in the United States, as there were at least five explosions, three of them being major disasters, with 14, 23 and 54 fatalities. As a result it now looks as if 1932 will have a slightly higher fatality rate per 1,000,000 tons of coal produced than the 3.31 rate established in 1931. (The tentative 1931 fatality rate per million tons of coal produced, which was set at 3.27 early in 1932 turns out to be a little low as the final returns indicate that the rate for 1931 is 3.31, instead of 3.27.)

The total number of fatalities in the coal mines of the United States will probably be slightly under 1,200 in 1932, the total for 1931 (final figures) being 1,463. While, as above stated, it now looks as though the fatality rate for 1932 will be higher than the rate for 1931, the difference will be slight and it is probable that the fatality rate for 1932 will be about 3.32. It may be found that, notwithstanding the 90 odd deaths from explosions in December, 1932, the fatality rate may be less than that of 1931. In any event, both 1931 and 1932 have fatality rates much lower than the rate of any other year of the present century.

Modern Prospectors Use Thousands of Tons of Mining Machinery

THOUSANDS OF TONS of gold-mining machinery are being carried over rough mountainous jungles by airplanes, as men seek to expedite the production of gold, according to W. H. Rastall, Chief of the Machinery Division, Department of Commerce. A 4,000-ton American dredge recently was carried by plane into the interior of New Guinea. The difficulty of this feat was increased by the fact that three mountain ranges had to be crossed. By the use of airplanes, the operators of the mine were able to deliver the machinery, escape the dangers of ambush by savages, and avoid the expense of building a railroad into the interior. In Canada, heavy mining machinery and in one instance a stamp mill, aggregating thousands of tons of weight, were carried by plane as far North as the arctic circle and installed in the mining region.

Coal Predominating Fuel in Generating Electricity

THE TOTAL AMOUNT of electricity produced for public use in the United States in 1931 was 91,729,000,000 kilowatt hours. Of this amount 67 percent was produced by the use of fuels and the remainder by the use of water power.

The amount produced by fuels was 61,124,000,000 kilowatt hours, and the fuel consumed in generating this amount of electricity was as follows: Coal, 38,717,000 tons; fuel oil, 8,114,000 barrels; gas, 139,350,000,000 cubic feet, and wood equivalent to about 270,000 tons of coal.

Of the total amount of fuel-generated electricity, 82 percent was produced by coal, 4 percent by oil, 14 percent by gas and less than 1 percent by wood. In 1926 the figures were 90 percent by coal, 5 percent each by oil and gas and less than 1 percent by wood. The amount of natural gas consumed in generating electricity in 1931 was 2.6 times the amount in 1926. These figures show that coal is by far the predominant fuel used for generating electricity. Our vast resources of this fuel indicate that it will continue to be the chief source of industrial power, at least as long as power is produced by the present methods of fuel utilization. (*U. S. Bureau of Mines*)

ALTHOUGH THE FATALITY rate of 3.84 per million tons produced in 1930 is much better than the 4.45 average rate for the past 25 years, it remained for 1931 with its numerous and varied vicissitudes to show the way to real progress in coal-mine safety, says Bureau of Mines, according to Daniel Harrington, the Bureau's safety expert, the tentative coal-mining fatality rate of 3.27 persons killed per 1,000,000 tons mined in 1931 sets a record not equaled or surpassed in any year in the present century.

The 1931 coal mining fatality record is the more remarkable because of having been established in a year of acute financial depression. During the past 25 years there have been at least four financial depressions of a major nature, that of 1907-1908, the war depression panic of 1914-1915, the primary post-war panic of 1920-1922, and the present or secondary post-war panic of 1930-1932. In all of these panic years except that of 1931, the fatality rate per million tons of production was higher than the average of the five-year period in which it occurred; 1931, on the other hand, with about 1,430 fatalities (according to present available data), and with approximately 438,000,000 tons produced, has a fatality rate per million tons of production of but about 3.27, as against 3.75 for the five-year period 1926-1930, inclusive. Hence, it will be seen that the excellent rate established in the panic or depression year 1931 does not follow the precedent of having a high accident rate, as has happened in other panic years of the present century.

Bituminous mining in 1931, with a fatality rate of about 2.78 per million tons of coal produced, shattered all known safety records. Anthracite mining, on the other hand, had a fatality rate in 1931 which handicapped the record of the coal industry as a whole; the fatality rate of 6.38 killed per million tons produced in anthracite mining in 1931 was materially higher than the 6.04 average rate of that industry for the five-year period 1926-1930.

World's First Man Made Coal Mine

IN THE FINE ARTS Building in Jackson Park, Chicago, a full-sized operating bituminous coal mine is now under construction for the opening on May 1 of the Museum of Science and Industry, which was founded by Julius Rosenwald. The mechanical and geological details will be so complete that both the visitor and the student may gain valuable information from them.

The following is some of the more interesting details of this complete man-made mine. A full-sized mine hoist, capable of reeling 500 feet of cable. A natural headframe, which will rise 65 feet above the main floor of the museum. A huge ventilating fan, with the housing fitted with explosion doors and parts cut away to give actual operating vision of 30,000 cubic feet of air per minute being blown. A cage capable of carrying 30 people down into the mine, and a skip of seven-ton capacity. A 500 foot shaft. The pump room and office of the mine superintendent are open for inspection, as are a set of layout and position graphs.

One of the features is a rotary dump in action, with an automatic scale. A complete regulation mine train has been installed and will carry passengers. A low seam short wall cutter and coal getter may be seen in action. A working face of a room and pillar mine. An arc wall cutter, a Joy loader and conveyor,

and a post drill may also be seen in action. Shutes worked through an inclined seam are visable. The main floor houses a complete exhibit on the economic and social aspects of the mining industry.

Every attempt is being made to make this mine as realistic as possible. Operators in uniform will be at all the workings. A new perfume called "Earth Odorant" has been made which will make a "bituminous" smell to permeate the mine. A fireproof artificial coal will be used, instead of real coal, but it will be complete as to fossil and geological formations. Other exhibits will show: Coal storage and handling, preparation, drainage and ventilation, mining tools, safety appliances, and analysis, geology and distribution of coal. Motion pictures will also be shown in the small theater of the museum.

Industrial Stock of Coal Decline

COAL COMMITTEE of the National Association of Purchasing Agents, Inc., reports stocks of anthracite and bituminous coal in the United States and Canada in industrial plants as of January 1 amounted to 26½ million tons, as compared with 27 1/3 million tons the preceding month, showing a decrease of slightly less than 1,000,000 tons.

Approximately half of this decrease came in the industrial bituminous stocks in the United States, and the remaining half from reductions in stocks in Canada and in anthracite consumers.

In the industrial classifications of bituminous coal consumers a sharp decline in stocks was registered among cement mills and by-product coke plants, stocks in the other classifications remaining nearly constant.

Industrial consumption of anthracite and bituminous coal in the United States and Canada during the month of December amounted to 22½ million tons, as compared with slightly less than 22 million tons during the preceding month, or an increase of about 2/3 million tons. (*American Metal Market*)

GENERAL BRICE P. DISQUE, President, the Anthracite Institute, recently stated that British, as well as Russian coal, should be subject to an embargo, pointing out that since England has been off the gold standard it has been possible for her to sell for $5.62 the same quality of product formerly sold for $8.

OHIO COAL OPERATORS have been busy with the freight rate hearings that have been under way at Columbus, Ohio. The Illinois situation has been more or less serious. Governor Horner has given the situation personal attention and attempted to bring peace to that troubled district. The Mining Commission, appointed by the Governor in the hope of bringing the two rival unions into agreement upon a peace program, has begun to function.

Something for Both Sides

PRESIDENT-ELECT ROOSEVELT is reported to be interested in the possibilities of a plan to link proposals for revision of anti-trust laws with the shorter working day and five-day week in industry.

The plan would legalize compacts between competing industry, with a view to planning and controlling production which would also involve agreements as to working hours and wages, as well as the prevention of over-expansion of production facilities. Some form of Governmental supervision undoubtedly would be entailed.

Sponsors of the plan believe it would escape the obstacles now facing anti-trust modification and legislation for shortening working hours. Industry would be allowed an increased measure of co-operation conditional on inauguration of easier working time, thus giving industry an inducement to do voluntarily what it perhaps cannot be compelled to do under the Constitution as it now stands, while opponents of relaxation of anti-trust laws might be won over by the gains of labor. (*Wall Street Journal*)

Receipts From Internal Revenue Decreased 24 Percent in Year

TOTAL INTERNAL REVENUE collections by the Federal Government in the calendar year 1932 were $1,420,068,593, showing a decrease of $474,000,000, or 24 percent under 1931, according to reports made public as of February 6 by the Bureau of Internal Revenue. (A comparative statement of collections for the calendar years 1931 and 1932, by collection districts and States, is printed on page 6.)

Shrinking income tax yields, which fell from $1,368,035,467 in 1931 to $784,617,096 in 1932, accounted for all of the decline in internal revenue collections, the records show, because miscellaneous collections, reacting to the additional taxes in the Revenue Act of 1932, increased 14 per cent.

While income tax yields were falling $583,000,000, or 42 percent in the year, miscellaneous collections advanced from $546,019,155 in 1931 to $635,451,497 in 1932, because of the new excise and stamp taxes, according to the Bureau. These trends shifted somewhat the importance of the two major revenue sources and the income tax last year supplied only 55 per cent of the internal revenue, according to the reports. Additional information furnished follows:

Corporation income taxes dropped from $800,808,537 in 1931 to $464,191,470 in 1932, while individual income taxes fell from $567,226,929 to $320,425,625, showing that the heaviest shrinkage was in taxable corporate income.

New York paid the highest aggregate of internal revenue taxes, $333,097,023. North Carolina, the source of the largest miscellaneous collections because of the tobacco industry, was second with $205,721,458, and Virginia was third, with $99,106,599.

North Carolina led the States in miscellaneous collections, yielding $194,371,012. Virginia was second, with $88,395,065, and New York was third, with $81,503,655.

New York paid the largest income taxes under the Federal law, $251,593,368. Pennsylvania was second, with $65,856,470, and Illinois was third, with $62,773,015. These States ranked in the same order in both corporate and individual income tax payments. New York paid $145,967,129 in corporate income taxes and $190,462,694 in individual taxes. Pennsylvania paid $33,696,569 in corporate income taxes and $30,159,900 in individual taxes. Illinois returned $35,122,361 in corporate income taxes and $27,630,653 in individual income taxes. (*U. S. Daily*)

Coal Used as Fertilizer in Germany

UTILIZATION OF treated coal as a fertilizer is reported by the German Coal Research Institute of Mulheim, to have produced favorable results in plant culture, according to a report to the Commerce Department's Chemical Division from Trade Commissioner William T. Daugherty, Berlin.

Experiments conducted by the institute are said to have shown the effectiveness of ground coal and lignite in plant life. The report also states that successful plant fertilization was accomplished by using mixtures of coal with soluble nitrogenous or potassium salts.

It is believed that such fertilizers may soon appear on the German market at a price range of about 25 to 30 marks per metric ton, the report states.

THE AMERICAN MINING CONGRESS has announced its dates for the annual May meeting, and full information concerning this meeting is presented in this issue. The National Coal Association is rapidly completing its program for its annual meeting, scheduled for Chicago, the middle of June.

Canada Taking Record Imports of British Coal

CANADIAN IMPORTS of British coal through the port of Montreal set a new record during 1932, according to a report from Consul J. H. Keeley, Montreal, made public by the Department of Commerce. British coal shipments totaling 1,335,000 tons arrived at the port during the navigation season. The total during 1931 was 706,000 tons. Anthracite shipments amounted to 1,119,000 tons last year, as compared with

(*Continued on page 37*)

LEGISLATION

THE MONTH OF FEBRUARY, legislatively speaking, has been an exceedingly active one. As is usual, in the last days of a congressional session the jam of legislative proposals is tremendous. With the closing of the present session of Congress, Capitol Hill has teemed with debate, hearings, and proposals. Every hour of every day has been filled to overflowing.

At this writing (February 20) official information is lacking concerning the dates for the special session of the new Congress; little doubt is expressed that there will be such a session, and the general information is that Mr. Roosevelt will call it for about March 20.

The legislative situation in the state legislatures is as congested as in the national legislature. Literally thousands of bills have been introduced in the states to "end unemployment"; for unemployment insurance; to regulate the utilities; to change banking, insurance, and judicial laws; and to secure new and quicker tax revenue. In many states various proposals are advanced to curtail government expenditures.

THERE IS LITTLE HOPE that any constructive legislation can be enacted in the closing days of the Seventy-second Congress, although many proposals are before it for action. Silver legislation has taken a large share of the spotlight. Hearings have been conducted by the Committee on Coinage, Weights and Measures, and after exhaustive discussion Congressman Andrew L. Somers, chairman, has announced that the committee will endeavor to develop a bill along the line of that proposed by Congressman W. L. Fiesinger, which contemplates the issuance of silver certificates which shall recite on the face of the certificate that there has been deposited in the Treasury of the United States blank dollars in silver, payable to bearer on demand, and is made legal tender for payment of debts and dues, public and private. The certificates are to be issued in denominations of one thousand, one hundred, twenty, and ten dollars.

Progress in Federal coal control legislation was marked by the decision of the special subcommittee of the Mines and Mining Committee of the Senate which has been studying the question of the constitutionality of the Kelly-Davis and the Hayden-Lewis bills, as now drawn. Their decision is that these bills are unconstitutional. Senator Walsh and Senator Logan voted against constitutionality, and Senator Robinson voted in the affirmative. This decision, of course, does not eliminate these bills, but it will undoubtedly cause certain sections to be rewritten. It is anticipated that both these bills will be reintroduced in the new Congress.

PRESIDENT-ELECT ROOSEVELT'S plan for bringing about tariff reductions, through reciprocal agreements, has been heralded by certain economists as a great forward step. Whether Mr. Roosevelt will develop this plan on a large scale is not clear at this time. This country, representing the richest market in the world, is most attractive to other nations on such a reciprocal basis. However, the industries to be affected, and a possibly contrary Congress, may block the idea. We may expect an early revival of the proposal to make adoption of the five-day week compulsory. The trend toward such legislation in the various states is marked. The House Committee on Labor, which has considered this legislation, recently reported the bill favorably.

THE NEW REGULATIONS under which mine depletion features of the 1932 revenue law will be administered were made available late in February. The wording of section 221 (3) (g) is as follows:

(g) "Gross income from the property" as used in section (114) (b) (3) and (4), and articles 221 to 248, inclusive, means the amount for which the taxpayer sells (a) the crude mineral product of the property or (b) the product derived therefrom, not to exceed in the case of (a) the representative market or field price (as of date of sale) of crude mineral product of like kind and grade before transportation from the immediate vicinity of the mine or well, or in the case of (b) the representative market or field price (as of the date of sale) of a product of the kind and grade from which the product sold was derived, before the application of any processes (to which the crude mineral product may have been subjected after emerging from the mine or well) with the exception of those listed below, and before transportation from the place where the last of the processes listed below was applied. Where there is no such representative market or field price (as of the date of sale), then there shall be used in lieu thereof the representative market or field price of the first marketable product resulting from any process or processes minus the costs (including transportation costs) of the processes not listed below. The processes excepted are as follows:

(1) In the case of coal—cleaning, breaking, sizing, and loading at the mine for shipment;

(2) In the case of sulphur—pumping to vats, cooling, breaking, and loading at the mine for shipment;

(3) In the case of iron ore and ores which are customarily sold in the form of the crude mineral product—sorting or concentrating to bring to shipping grade, and loading at the mine for shipment; and

(4) In the case of lead, zinc, copper, gold, or silver ores and ores which are not customarily sold in the form of the crude mineral product—crushing, concentrating (by gravity or flotation), and other processes to the extent to which they do not beneficiate the product in greater degree (in relation to the crude mineral product on the one hand and the refined product on the other) then crushing and concentrating (by gravity or flotation).

In all cases there shall be excluded in determining the "gross income from the property" an amount equal to any rents or royalties which were paid or incurred by the taxpayer in respect of the property and are not otherwise excluded from the "gross income from the property." Where royalties in the form of bonus payments or advanced royalties (see article 230) have been paid in respect of the

property in the taxable year or in prior years, the amount excluded from "gross income from the property" for the taxable year on account of such payments shall be an amount equal to that part of such payments which is allowable to the products sold during the taxable year.

THE McKELLAR AMENDMENT to the first deficiency bill concerning refunds in excess of $20,000 has been attached to the Treasury-Post Office bill which is now in conference. This amendment provides that refunds in excess of $20,000 shall be referred by the Commissioner of Internal Revenue to the Board of Tax Appeals for approval. It is understood that refunds in excess of $20,000 will still be referred to the Joint Committee on Internal Revenue Taxation and that then, if questioned, the cases will be sent to the Board of Tax Appeals by the Joint Committee. The original amendment was vetoed by President Hoover.

H. J. RES. 533 was recalled from the House to the Senate early in February on motion of Senator Norbeck, of South Dakota. Senator Norbeck stated "He had an amendment that he wanted to offer to it, making it possible to keep better track of these mining claims, and have them available for mining purposes." The provision for the suspension of assessment work for the year ending at 12 o'clock meridian July 1, 1933, is subject to an amendment by Senator Carl Hayden (Dem., Ariz.) to which there has been some measure of objection. The amendment reads as follows: "Provided further, That every claimant of any such mining claim, in order to obtain the benefits of this act, shall file or cause to be filed, in the office where the location notice or certificate is recorded, on or before 12 o'clock meridian July 1, 1933, a notice of his desire to hold said mining claim under this act, which notice shall state that the claimant, or claimants, were entitled to exemption from the payment of a Federal income tax for the taxable year 1932." Some mining men feel that claim holders, either individuals or groups, should not be compelled to perform assessment work because one member of the group pays income tax.

AFTER EXTENDED HEARINGS before a subcommittee of the Ways and Means Committee in the matter of the Hill, Crowther, and Connery bills, the committee voted not to report. A vote was taken in the House on February 13 in an attempt to discharge the Ways and Means Committee from consideration of the Crowther bill, but the motion was lost. This was preceded by a Democratic caucus in which but four votes were reported to have been registered against entertaining the motion on the floor. In the Senate, Senator Hatfield, of West Virginia, presented an amendment embodying the features of the Connery (Dem., Mass.) depreciated currency bill to the gasoline tax revenue measure. At the present time no further action has been taken on this amendment.

PRESIDENT GREEN, American Federation of Labor, has announced the "labor program" under the new administration, which includes: Federal licenses for corporations doing interstate business; national economic planning; a protective service for investors; Government control of credit; higher wages; and complete unionization of all groups.

THE NATIONAL COMMITTEE on Labor Injunctions have prepared a model bill, to be introduced in many state legislatures. It "prohibits injunctions interfering with right of workers to organize, to bargain collectively, to strike, meet and picket." It outlaws contracts under which workers are declared to have been coerced into agreeing not to join unions, and provides that injunctions can not be issued until both sides to a dispute have been heard, and for jury trials for contempt.

THE FOLLOWING BILLS remain before the Seventy-second Congress, with little likelihood of action. However, many will be reintroduced in the special session of the Seventy-third Congress:

To amend an act entitled "An act to establish a uniform system of bankruptcy throughout the United States," approved July 1, 1898, and acts amendatory thereof and supplementary thereto. (H. R. 14359—Sumners of Texas; referred to the Committee on the Judiciary.)

To restore confidence by raising commodity prices through expanding the currency by using silver to broaden the metallic monetary base while preserving the gold standard. (H. R. 14364—Cross; referred to the Committee on Coinage, Weights and Measures.)

Joint resolution to amend the revenue act of 1932. (H. J. Res. 566—Ayres; referred to the Ways and Means Committee.)

To restore the normal purchasing power of the dollar and raise commodity prices through an expansion of the currency by using silver to broaden the metallic monetary base, while preserving the gold standard, and to reduce the amount of gold in the dollar from 25.8 grains nine-tenths fine to 17.2 grains of gold nine-tenths fine. (H. R. 14374—Dies; referred to the Committee on Coinage, Weights and Measures.)

To provide for the coinage of a ½-cent piece, a 1¼-cent piece, a 1½-cent piece, a 2-cent piece, and a 3-cent piece. (H. R. 14386—McFadden; referred to the Committee on Coinage, Weights and Measures.)

Joint resolution to repeal the Federal reserve act. (H. J. Res. 569—McFadden; referred to the Banking and Currency Committee.)

To protect American labor by equalizing the cost in the United States of articles imported from foreign countries, the currency of which has depreciated. (H. R. 14413—Connery; referred to the Ways and Means Committee.)

To fix an American valuation of imported merchandise for the assessment of customs duties. (H. R. 14418—Murphy; referred to the Ways and Means Committee.)

To prevent loss of revenue, to provide employment for American labor, and to protect the industries and agriculture of the United States against the effects of depreciation in foreign currency. (H. R. 14428—Hawley; referred to the Ways and Means Committee.)

To provide revenue by compensating for depreciation in foreign currencies and to protect American labor against the effects of competition based on depreciation of foreign currencies. (H. R. 14435—Cooper of Ohio; referred to the Ways and Means Committee.)

To authorize the purchase by the Government of silver, to provide for the issuance of silver certificates in payment thereof, and for other purposes. (H. R. 14486—Bankhead; referred to the Committee on Coinage, Weights and Measures.)

To prevent interstate commerce in certain commodities and articles produced or manufactured in industrial activities in which persons are employed more than five days per week or six hours per day. (H. R. 14518—Connery; referred to the Committee on Labor.)

Joint resolution to provide protection and relief to farmers by aiding them to conserve and liquefy their mineral rights through recognized and established agencies engaged in the pooling of mineral rights underlying farm lands. (H. J. Res. 587—Jones; referred to the Committee on Banking and Currency.)

To regulate competition, stabilize trade and industry, and for other purposes. (H. R. 14583—Cable; referred to the Committee on Interstate and Foreign Commerce.)

To aid in securing a normal and stable commodity price level, through the establishment of an auxiliary monetary reserve of silver and the issuance of silver certificates, under circumstances insuring the maintenance of the gold standard. (H. R. 14645—Fiesinger; referred to the Committee on Coinage, Weights and Measures.)

To extend the mining laws of the United States to the Death Valley National Monument in California, and for other purposes. (H. R. 14646—Arentz; referred to the Committee on Public Lands.)

To further restrict immigration into the United States. (H. R. 14711—Green; referred to the Committee on Immigration and Naturalization.)

To provide for registration of aliens and a certificate of naturalization. (H. R. 14712—Green; referred to the Committee on Immigration and Naturalization.)

To provide for the suspension of immigration of aliens into the United States. (H. R. 14713—Green; referred to the Committee on Immigration and Naturalization.)

State Legislation

STATE LEGISLATURES have been extraordinarily prolific in their proposals, one state presenting 100 different bills to "reduce taxation." The following are of interest, as indicating the trend:

Pennsylvania

THE $29,000 APPROPRIATION reduction in the State Department of Mines recommended by Governor Pinchot for the 1933-35 biennium, like other general fund cuts, has been incorporated in the general appropriation bill. The Mines Department cut may result in the Governor's permitting four vacancies among the mine inspectors to continue, and the dropping of eight to twelve employes of the department's administrative force.

ACCORDING TO A BILL introduced in the House of Representatives, an anthracite miner in Pennsylvania must be a citizen of the United States, who has first obtained a certificate of competency. The bill has been sent to the Committee on Mines and Mining, which has not yet reported out any measure.

A bill has also been introduced authorizing the Department of Internal Affairs to regulate the weighing of all anthracite and bituminous coal mined or sold in Pennsylvania. The bill requires a check-weighman on every scale. The penalty is a fine of $250 to $500, or one year in prison, or both, for violators.

A RESOLUTION in the House of Representatives, providing that it was the sense of the legislature that American purchases of Russian coal have meant a loss of $2,700,000 and forced 1,500 anthracite miners into idleness. The preamble of the resolution stated that not only was the loss in revenue great but the shipments of Russian coal here meant also a wage loss of $1,600,000, as well as the loss of the purchasing power of that amount of money.

In spite of the two-dollars-a-ton tariff placed on the imported coal, the resolution said, the importation of Soviet coal during the last 10 months of 1932 amounted to 171,623 tons, or an average of 17,163 tons a month, were shipped into this country. This coal, it was said, was sold in New England States at 75 cents more a ton than is paid for Pennsylvania anthracite. It was contended that the issuance of an embargo order against the importation of Russian anthracite by the Treasury Department "would stop this flood of Russian coal and provide work for those 1,500 miners now forced into the ranks of the unemployed."

The resolution concluded by urging the Federal Treasury to issue the embargo and "end the unfair competition of forced foreign labor with the well-paid labor of Pennsylvania, restore to the miners of this Commonwealth the right to work and support their families, turn millions of dollars back into the channels of trade that make for prosperity and insure to the merchants and manufacturers the profits that such trade will mean.

A BILL HAS BEEN INTRODUCED authorizing the Commonwealth to regulate and control the practice of coal-mine operators paying miners on the basis of weight of coal mined. The bill gives inspectors of the Department of Labor and Industry free access to the premises, collieries, and records of any mines. The department's inspectors are empowered to inspect the scales, and to tamper with them thereafter subjects offenders to a fine of $1,000 to $5,000.

THE LEGISLATURE HAS ALSO introduced a bill providing "for the protection of persons employed in the anthracite mines by prohibiting the use of trolley locomotives in certain mines and requiring attendants at certain ventilating fans and providing penalties."

The bill provides that one year after the passage of the act it shall be unlawful to use electric haulage by locomotive operated by means of a trolley wire in any gaseous portion of an anthracite mine, "except upon the intake receiving air fresh from the outside."

The measure also would make it unlawful, if enacted, to operate any gaseous anthracite mines unless the ventilating fan used for the purpose of supplying air to the persons working in the mines is under the constant supervision and care of an attendant. It is provided, however, that this section of the act shall not prohibit the placing of two or more fans under the supervision of one attendant if, in the opinion of the mine inspector of the district, the locations of the fans are such that the attendant can readily detect any stoppage or reduction in the speed of any of the fans.

The penalty clause of the bill provides that any owner, operator, superintendent, or the agent or employe of any such owner or operator who violates any provisions of the act or who hinders or delays any officer in the performance of his duty in the enforcement of the act shall be guilty of a misdemeanor and shall, upon conviction, be sentenced to pay a fine of not less than $100 nor more than $200, or undergo imprisonment of not less than two months, or both, at the discretion of the court. (*Anthracite Bureau of Information*)

Massachusetts

A PROPOSAL to levy taxes upon the gross sales of retailers and upon the gross income of manufacturing, mining, public utility and personal service businesses and professions to replace the present state property tax was made by Governor William A. Comstock in a special message to the Legislature.

West Virginia

THE HOUSE OF DELEGATES has approved a resolution providing for an investigation of public utilities of the State.

By vote of 86 to 4, it approved a resolution by Delegate Holt to set up a committee of five "to investigate the utility problem in the State of West Virginia."

The committee will investigate the rates, rate making process and financial set-up of any or all utilities operating in the State; to look into the participation of utility employes, officials, companies and corporations in political activity, elections and all other governmental activities; to investigate the activities, rulings and orders of the Public Service Commission; to study the assessment and taxation of utilities, or to investigate any other matter dealing with utilities that the committee may determine to be of common good to the citizens of the State.

Illinois

TWO LARGE FLEETS of trucks operated for common carrier freight service in northern Illinois have been ordered by the Illinois Commerce Commission to cease such operations, their respective applications for certificates of convenience and necessity having been denied on the ground that the services of the railroads and the Railway Express Agency are adequate.

The Commission held that the territory involved is fully served by railroads and the express agency; that the applicant is operating unlawfully, and that the matter should be referred to the Attorney General for action to cause the company to discontinue its intrastate service.

The Interstate Trucking Co., operating 52 trucks in the same territory, applied for a certificate in 1926, after a complaint against its operations had been filed by the Illinois Central Railroad. The Commission issued a similar order in this case.

California

A CONSTITUTIONAL AMENDMENT fixing the limit of taxes that may be assessed on property for all purposes, local or otherwise, at $1.50 per $100 assessed value was proposed in the Legislature.

The proposal, one of more than a hundred designed to lower taxes, would except taxes levied to pay interest and redemption on bonds heretofore issued.

The limit could only be exceeded when two-thirds of the electors of any political subdivision voted to incur additional indebtedness.

Maine

A DECREASE of $2,154,127 of revenues to the State of Maine from estate and inheritance taxes in 1932, compared with receipts from these sources in the preceding year, is shown by figures from the Assistant Attorney General in charge of inheritance tax collections:

For the year 1932 receipts were: Estate tax, $193,105; resident inheritance tax, $481,552; non-resident inheritance tax, $11,382; total, $686,040.

For the year 1931: Estate tax, $1,601,070; resident inheritance tax, $1,205,739; non-resident inheritance tax, $33,358; total, $2,840,167.

PROTESTS OF TAXPAYERS concerning their ad valorem tax levies would be heard by a Court of Tax review consisting of three district judges designated by the Governor, under the terms of House bill 260. Either the taxpayer or the country would have the right to appeal to the Supreme Court from the Court of Tax Review, under its provisions.

Taxpayers would be required to file their protests within 10 days after the filing of the budget and levy of the county or the municipal subdivision thereof with the county clerk.

BILLS INTRODUCED in State Legislatures, of interest to the mining industry are as follows:

Labor

Ariz. H. 10. To provide eight-hour law for all employment; also for State payment of difference between cost and market price of farm products.

Calif. S. 112. To prohibit "yellow-dog" contracts.

Calif. A. 878. To establish a system of compulsory unemployment reserve as recommended by State Unemployment Commission.

Calif. A. 269. To provide six-hour day and five-day week for state employes.

Colo. S. 500. To enact a new old age pension law; Judiciary.

Colo. S. 539. Relating to old age pensions; Industrial relations.

Colo. S. 585. Relating to old age pensions; Industrial relations.

Colo. S. 644. To establish a system of unemployment insurance; Industrial relations.

Colo. S. 715. To prohibit the use of public funds for any pension or retirement funds; Industrial relations.

Conn. H. 94. To provide eight-hour day and 6-day week for laborers on highways.

Idaho. S. 51. To repeal the old age pension law.

Ill. S. 160. To extend Emergency Relief Commission from July 1, 1933, to Aug. 1, 1935.

Ill. S. 178. To provide five-day week in factory, store, and other employment until Dec. 1, 1934.

Mass. H. 821. To provide for payments to employes during periods of involuntary unemployment; Insurance.

Mass. H. 905. To establish a system of unemployment insurance; Labor and industries.

Mass. H. 1024. To establish a system of old age insurance; Pensions.

Me. S. 42. To prevent pauperizing of unemployed wage earners.

Minn. S. 286. To require written contract for all employments, trades, showing rate of pay, etc.

Nev. A. 10. To establish an old age pension system.

N. Y. S. Int. 208, Pr. 211. To create an unemployment reserve fund; Finance.

N. Y. S. Int. 227, Pr. 230. To create temporary commission to investigate most practical and efficient method of establishing a system of contributory pensions.

N. Y. To repeal old age security act; Old age.

N. Y. S. 50. To provide five-day week.

N. Y. A. 128. To provide five-day week.

Okla. S. 28. To provide for unemployment relief, appropriating $600,000.

Okla. S. 82. To provide pensions for aged persons.

Oreg. S. 11. To create commission for self-help for unemployed.

Pa. H. 53. To provide six-hour day and five-day week.

R. I. H. 529. To create commission on employment stabilization.

Tex. H. 141. To provide old age pensions.

Wash. H. 10. To provide six-hour day and 30-hour week.

Wash. H. 13. To provide minimum wage on public works.

Taxation

Ga. S. 56. Howard. To amend constitution by exempting home owners from state taxation up to $5,000.

Ill. S. 156. To enact retail sales tax of 2 percent.

Ill. S. 161. To tax net income of corporations 3 percent.

Ill. S. 162. To authorize county boards of tax gross receipts of baseball, football and horse racing 2 percent.

Ill. H. 97. To exempt homesteads up to $3,000.

Ill. H. 116. To tax retail sales 1 percent.

Ill. H. 151. To apportion one-third of gas tax to Emergency Relief Commission.

Ind. S. 74. To levy excise tax on corporations.

Ind. H. 154. To impose individual and corporate income tax.

Minn. H. 332. To levy truckmile tax on common motor carriers.

Minn. H. 367. To impose graduated income tax.

N. Mex. To amend constitution to exempt homesteads up to $2,000.

N. Mex. H. 20. To tax lubricating oil used in gasoline motors.

Tex. H. 84. To levy tax on sulphur.

Wash. S. 16. To impose a privilege sales tax.

Minn. S. 579. Weber. To require that 85 percent of aggregate legal reserve on Minnesota life insurance policies be invested in state; 40 percent to be in paper secured by agricultural land. Insurance.

Workmen's Compensation

Calif. A. 901. To permit separate rates for stock and nonstock insurance carriers; Insurance.

Calif. A. 1030. Relating to workmen's compensation insurance premium rates; Insurance.

Colo. H. 645. Concerning selection of physicians and hospitals by insurers, employers and employes; Industrial Relations.

Colo. H. 729. To substitute a new workmen's compensation law with State fund insurance; Industrial Relations.

Conn. S. 364. To make benefit payments retroactive to date of injury and to increase benefits to two-thirds of average weekly wages; Judiciary.

Ill. H. 114. To create a state insurance fund to provide insurance under Workmen's Compensation Act; Industrial Affairs.

Nebr. H. 367. To limit amount payable for medical and hospital service and to limit recovery for accidents aggravated by preexisting disability.

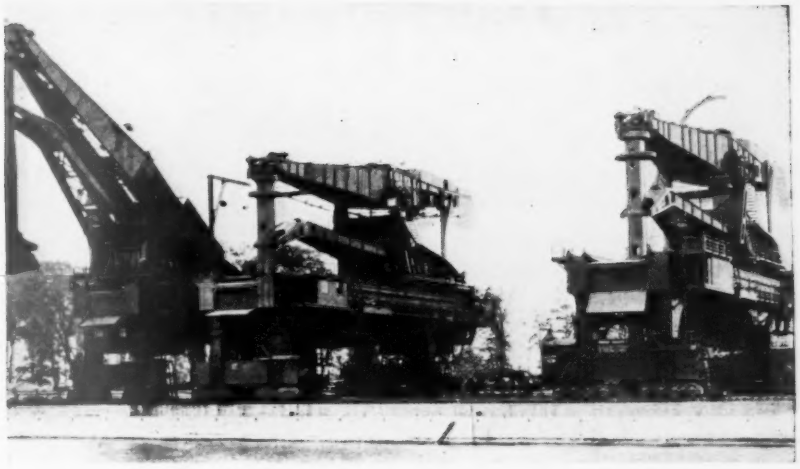
Nebr. H. 402. To create workmen's compensation court commission of three members to administer the Compensation Act.

N. Y. To create temporary commission to study administration of workmen's compensation law; Finance.

Okla. S. 151. To create a state workmen's compensation insurance fund.

R. I. H. 542. To make acceptance of workmen's compensation law mandatory.

ALLOY STEELS and their Uses in the Mining Industry



by

W. J. PRIESTLEY*

DURING THE PAST THREE YEARS operations in the mining industry have been greatly curtailed and plants have not been maintained at maximum efficiency, with the result that much of the existing equipment is badly in need of repair. During this period of idleness economic problems have changed, and in order to compete under the new conditions in the future, obsolete plants and processes must be discarded. Efficient production will call for resourceful engineering that utilizes new metals and materials which were not available when the original plants were constructed.

The construction of modern mining equipment requires a wide field of diversified technical information. It calls for a broad knowledge of mechanical, chemical and metallurgical principles which are so closely related that it is sometimes difficult to differentiate between them. The construction and operating engineer is interested in materials that will save weight, increase strength, and at the same time reduce installation and operating costs. He is looking for materials that will give longer life when subjected to wear and abrasion and desires something that will resist oxidation and corrosion. In making his selection he must balance the higher initial cost with the saving that can be made in the cost of operation. The use of alloy steels which will insure continuous operation, prevent breakdowns and make possible the minimum amount of lost time for repairs and replacements will result in more economical operation and greater profit.

In the field of metallurgy, research engineers have made great strides in developing new steels which will aid the mining engineer in solving new problems that confront him. It has been found that the addition of certain alloying metals to iron and steel produces results that can not be obtained from simple carbon steel and ordinary iron. Some

Rabble Roaster Discs with Edges Protected by Haynes Stellite

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of these alloys add strength which make it possible to reduce the weight of moving parts, to increase speeds and to save power for operation; others impart hardness and resistance to wear; while still other alloys impart resistance to the corrosion and oxidation so prevalent in certain fields in the mining industry.

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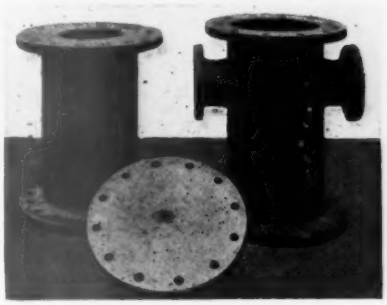
Chrome Nickel Steel Pipe Fittings

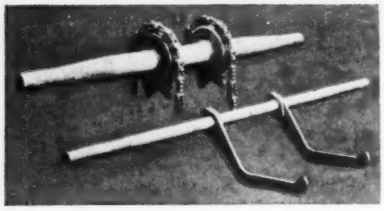


IT WILL NOT be possible to enumerate in detail all the uses of the different kinds of alloy steel. The intention is rather to give a few important ones which may serve as suggestions for mining engineers who are familiar with their own intimate problems. In reviewing the properties of some of the modern alloy steels, the types of steel which are offered as commercial products by numerous foundries and steel companies will be discussed, and cases where they are now being used successfully will be cited.

The handling, crushing and grinding of minerals produce constant wear and abrasion on mechanical equipment, and this is one of the greatest problems in mining operations. Ordinary steel and iron are relatively soft and offer only mild resistance to this action, with the result that constant repair and replacement are necessary. For many years, 12 percent manganese steel has been used for mechanical parts subject to excessive wear and abrasion. In many applications where the working surface is subjected to severe impact it has shown from 4 to 20 times the life of plain carbon steel. It has been successfully used for shovel teeth, caterpillar treads, wearing plates, crusher jaws, gyratory crusher parts, hammer and swing type crushers, railway crossings, frogs and switches. The addition of small percentages of chromium and, in some cases, chromium and copper raises the yield point of this steel where this is desirable.

The hard-surfacing of machine parts with wear-resisting alloys has been very successful. This is accomplished by depositing a thin layer of the fused hard metal upon the surface of the part in question. Haynes Stellite, an alloy of cobalt, chromium, and tungsten is the best-known hard-surfacing metal. The life of swing hammers and segments of coal crushers, dipper teeth and clam shell buckets has been increased as much as 7 times over that obtained from ordinary steel by applying a thin layer of hard-facing material to the edges of these parts. Haynes Stellite is being applied

* *Vice President, Electro Metallurgical Company.*



High Chromium Steel Conveyor Chain Shaft and Sprocket

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with extreme satisfaction to many other machine parts which are subject to excessive wear. This list includes bucket scraper lips, classifier drag chains, cable drills, augers, hand hammer drill handles, core drills, crusher jaws, skip guide shoes, sprockets, scrapers, orange peel bucket leaves, grizzly bars and roaster rabble disks. A new development which will prove of great advantage in rock drilling consists of a demountable drill head of practical design made of forged carbon or alloy steel faced with Haynes Stellite. In rock of moderate hardness this demountable attachment has, with a single grinding, drilled from 5 to 12 times as far as standard drill steel.

Plates of jaw crushers have been made of 25 percent chrome steel with 1 to 2 percent carbon. The addition of nickel in amounts of 1 to 2 percent tends to toughen the 25 percent chrome steel and increase its life if shock resistance is a factor. Chilled cast iron balls containing 3 percent chromium have shown better service than plain chilled iron balls in the grinding of copper ore. The ball consumption with chilled cast iron was reported as 3½ pounds per ton of ore ground, while with the 3 percent chrome chilled iron balls the consumption of metal was reduced to 1½ pounds per ton of ore ground. The relative cost in service more than offset the increased cost of the chrome ball.

THREE PERCENT chrome steel is being considered for use in the form of plates, forgings, and castings where resistance to wear is required. Its use is now being studied in chutes, plates, and liners in jaw crushers. Railway rails of 3 percent chrome steel in the "as-rolled" condition have been in service for more than two years and show far better wear resistance than carbon or medium manganese steel rails. Frogs and switch points of 3 percent chrome steel have been made for trial service. Recent tests of locomotive tires of 3 percent chrome steel show results far superior to carbon steel.

In the construction of mining equipment there are many parts which are subject to severe stresses and heavy duty in which carbon steel is not satisfactory, and it has been found more economical to use heat-treated alloy steel for vital machine parts. The following list includes some of these parts which have given good service when made of the different kinds of alloy steels shown below. The carbon content will vary for different conditions.

Shafts for Steam Shovels and Other Heavy Duty Equipment

Nickel	1.00 to 1.50 percent
Chromium	0.45 to 0.75 percent
Chromium	0.80 to 1.10 percent
Molybdenum	0.15 to 0.25 percent
Chromium	0.80 to 1.10 percent
Vanadium	0.18 percent

Gears Requiring Resistance to Wear and Heavy Shocks

Manganese	0.50 to 0.80 percent
Nickel	3.25 to 3.75 percent
Nickel	1.00 to 1.50 percent
Chromium	0.45 to 0.75 percent
Nickel	1.50 to 2.00 percent
Chromium	0.90 to 1.25 percent

Armature Shafts

Chromium	0.50 percent
Molybdenum	0.20 percent

Diesel Engine Valves

Nickel	8.00 to 25.00 percent
Chromium	17.00 to 19.00 percent

Clutch Gearing

Chromium	0.80 to 1.10 percent
Vanadium	0.18 percent

Highly Stressed Bolts, Studs, and Pins

Chromium	0.80 to 1.10 percent
Vanadium	0.18 percent
Nickel	1.00 to 1.50 percent
Chromium	0.45 to 0.75 percent

Header Dies

Silicon	0.45 to 0.55 percent
Chromium	0.70 to 0.80 percent

Cylinders and Barrels for Pneumatic Hammers

Chromium	0.80 to 1.10 percent
Vanadium	0.18 percent
Chromium	0.55 to 0.75 percent

Pistons and Piston Rods

Silicon	0.40 to 0.55 percent
Chromium	0.15 to 0.25 percent

Mine Car Axles

Chromium	0.50 percent
Molybdenum	0.20 percent
Manganese	0.70 to 1.00 percent
Chromium	0.80 to 1.10 percent

Driving Chains

Nickel	1.50 to 2.00 percent
Chromium	0.90 to 1.25 percent
Nickel	1.00 to 1.50 percent
Chromium	0.45 to 0.75 percent

Chisels

Chromium	1.35 to 1.45 percent
Tungsten	2.30 to 3.00 percent
Vanadium	0.15 to 0.20 percent

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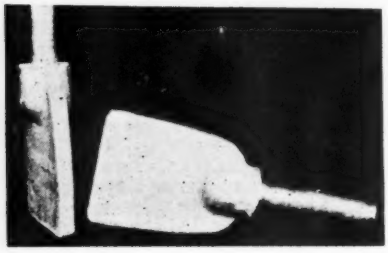
Furnace Plows Containing High Percentage of Chromium and Nickel



Arrow Indicates Hard Faced Bar of Grizzley After Seven Months Service

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Hollow Drills

Molybdenum	0.20 to 0.30 percent
Vanadium	0.15 to 0.25 percent

Shovels, Buckets

Nickel	2.75 to 3.25 percent
Chromium	0.60 to 0.95 percent
Chromium	0.40 to 0.60 percent
Manganese	1.10 to 1.40 percent
Silicon	0.70 to 0.80 percent
Chromium	0.40 to 0.60 percent
Manganese	1.10 to 1.40 percent
Silicon	0.70 to 0.80 percent
Vanadium	0.10 percent

Knocker Bars

Silicon	0.12 to 0.18 percent
Vanadium	0.22 to 0.28 percent

Pipes and Tubing

For corrosion resistance, 4 to 6 percent chrome steel.

For increased strength, 0.40 to 0.60 percent chromium, 1.10 to 1.40 percent manganese, 0.70 to 0.80 percent silicon.

WOODEN CARS are still being used by some mining companies. Comparative figures have shown that the average life of wooden cars for certain service was 5 years while ordinary steel cars in the same service averaged 15 years. Steel cars will take 20 percent more load, and repairs have been found to be 28 percent less than on wooden cars. Consideration is now being given to the use of welded high-strength mild-alloy steel for further lightening construction. Suitable steel for this use contains 0.20 to 0.30 percent carbon, 0.40 to 0.60 percent chromium, 1.10 to 1.40 percent manganese, and 0.70 to 0.90 percent silicon. High chrome steel in the form of plates and shapes is now available and has been considered for cars

(*Continued on page* 34)

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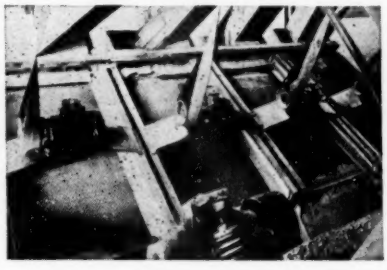
Battery of Alloy Steel Vibrating Screens



MODERN MINING PRACTICE

Dehydrating Washed Coal

Digest of paper by R. Dawson Hall, "Coal Age," January, 1933

A SUCCESSFUL METHOD of drying washed coal has been introduced at the mines of the Central Indiana Coal Company and the Sherwood-Templeton Coal Company in Greene County, Indiana. Minus ¾-in. coal will hold water much like a sponge and after six months' experimentation at the Sherwood-Templeton Coal Company, a dehydrating apparatus was developed which has recently been placed on the market by the Oliver United Filters Company.

The main unit consists of an apron conveyor made with fine-mesh bronze screens. Minus ¾-in. coal travels horizontally on this conveyor for a distance of about 25 ft. and at right angles to an inflow of hot air provided by a small furnace, which is kept at a temperature of from 500 to 700 degrees F. This air is drawn by an exhaust fan from the furnace into a mixing chamber and thence through the coal as it travels on the conveyor just described.

Hot air, introduced at the top of the dehydrator, in passing through the coal picks up the moisture, then passes through the wire-mesh screen at the bottom of the conveyor, through the exhaust fan, and out into the atmosphere in the form of wet vapor. By regulating the temperature of the hot air and the speed with which it passes through the coal, enough excess water can be extracted to render the finished product safe from frost at any temperature to which it may be subjected.

By means of a thermocouple located in the duct going to the dehydrator, the temperature of the air passing through the coal is kept constant, and, with the exception of one man to tend the furnace, the device operates automatically. The advantages of this method is that the coal is not disintegrated, because it passes through the machine without agitation of any kind.

Operating cost consists of wages of one attendant and power required to drive the machinery. For 80-tons-per-hour output, this consists of one 60-hp. and two 5-hp. motors, the first operating the exhaust fan and the other two the stoker and conveyor. Friar Tuck mine produces about 2,400 tons of coal daily, the sizes below 4-in. being passed through the washer.

Safety Practices at Spring Canyon Coal Company, Utah

Digest from paper by D. J. Parker, Bulletin, U. S. Bureau of Mines

THE RESPONSIBILITY for preventing accidents rests upon the management, and in the case of the Spring Canyon Coal Company such responsibility is recognized and accepted with little or no reservation. This company, aside from the humanitarian aspects involved, believes that safety is good business and not a matter to be treated passively or in a perfunctory manner.

Although the company maintains no specific safety organization, safety is considered a major operating problem. The underground officials, through constant supervision and personal contact with the workers, are endeavoring to make the entire organization safety-minded. There are available 40 trained apparatus men, comprising eight teams, in the employ of this company, and the work of training all of the employes in first aid was completed in May, 1932. First-aid material is kept at suitable places underground, and an up-to-date hospital is maintained at Spring Canyon, with a surgeon and trained nurse in constant attendance.

The accident record for 1931 may be briefly stated as follows:

Total accidents		168
Total coal mined	tons	312,397
Coal mined per accident	do	1,859
Time worked	man-hours	516,976
Total time lost (one fatal=6,000 days)	days	8,387
Total time lost per accident	do	49

$$\frac{168 \text{ accidents} \times 1{,}000{,}000}{516{,}976 \text{ man-hours}} = 324, \text{ or frequency rate.}$$

$$\frac{8{,}387 \text{ days lost} \times 1{,}000}{516{,}976 \text{ man-hours}} = 16.4, \text{ or severity rate.}$$

During the 12-year period 1918-1929, the average number of fatal accidents per year was 2.91, as against 1 in 1931; the tonnage produced per fatality for 1918 to 1929, inclusive, was 139,830, compared with 312,397 tons produced to 1 fatality in 1931. The fatality rate of this company per 1,000 employes during the period 1918-1929, inclusive, was 7.8, which was materially lower than the 9.4 rate for all of Utah's coal mines for that period, but was very much higher than the similar rate of 2.9 for the coal mines of the United States for the same period.

Silver-Lead Smelting Progress

Digest of Article by H. R. MacMichael, Chief Engineer, American Smelting & Refining Co.—"Mining and Metallurgy," February, 1933

IN THE CHIHUAHUA DISTRICT of Mexico the value of silver in the ore has usually been considerably greater than that of the lead, so the collection of the silver in the bullion with the least possible loss has been a principal object. In the early period with 7 to 10 percent lead on the charge it was considered necessary to have about 10 percent matte fall to assist in the collection of silver. As the lead on the charge increased, owing to the greater proportion of concentrate, the necessity of matte as a collector for silver diminished until with an increasing amount of zinc present it became a positive detriment, tending to float out with the slag a zinky, mushy material high in silver. The development, therefore, was to the present stage of very complete roasting, with the production of little, if any, matte.

About 1927, changes in the ore supply and conditions made desirable the adoption of the double sintering practice. This has now been extended to a considerable amount of triple sintering, giving a product just above 1 percent sulfur, and resulting in a further improvement in blast-furnace tonnage and coke consumption. In 1910, furnaces were constructed 48 x 202 in., and this size has since remained standard.

The great improvement in furnace tonnage and coke consumption has come about mainly through the substitution of a thoroughly prepared and sintered charge high in lead, contrasted with the raw ores with a variable amount of fines as originally smelted. With the latter, furnaces might smelt 100 tons of ore per day, requiring at least 16 percent of coke to ore. Using the H & H roast product, ore tonnage increased to perhaps 120 tons per furnace-day, with better furnace conditions. The next step included sintering of the sulfides, the fines being screened out of the oxidized ore and agglomerated with the sinter. This double improvement, together with the increase in furnace size above noted, resulted in a tonnage of about 225 per furnace-day and with a reduction in the coke required. Proceeding to the period of double or even triple sintering with about 90 percent of high-lead sinter on the charge, furnace tonnages have increased to from 350 to 450 tons per furnace-day.

Cottrells or baghouses for fume recovery are now an essential feature of all modern plants, both for the gases

from the sintering plant and from the blast-furnace plant. These are equipped with an effective mechanical shaking system and with fans giving up to 3-in. effective pressure; a volume of from 100 to 300 cu. ft. of gas per bag per minute is handled.

Handling of ores was originally done mainly by hand shoveling and wheelbarrows to storage, and a repetition of this to the furnace charge car. Most of the ore now comes in steel cars, dumping into track bins, followed by belt conveyors and elevated concrete storage bins, so that there is practically no hand shoveling.

What Is a Safe Mine-Haulage Signaling System?

"BEFORE A RECENT MEETING of the Tamworthy Mining Institute, Mr. S. W. Richards gave a lecture on 'Mine-Haulage Signalling,' in which he comprehensively surveyed the position at the present time. He outlined the application of various signalling circuits and dealt with the measures adopted to prevent signalling apparatus from causing open sparking. The speaker said that there probably would be developments in the future, and the most hopeful possibility he foresaw was that the operating lines, whether bare or otherwise, would be energized by an absolutely noninductive current with no reasonable possibility of it becoming inductive, as in the event of the failure of preventative devices such as shunt coils, etc. There was no technical reason why such a method should not be adopted, but for the present economics were a stumbling block."

The above item, taken in its entirety from *The Iron and Coal Trades Review* of November 11, 1932, calls attention to a very definite *want* in connection with safe operation of gassy mines. What is a really safe method of signalling in haulage slopes? How can arcing and sparking from signalling lines be so controlled as to eliminate possible gas ignitions? Have you the answer? If so, by all means pass it along.

Conveyor Mining in Anthracite

Digest from paper by Ivan A. Given, "Coal Age," January, 1933

CONVEYOR MINING is used to overcome adverse conditions which would be unsuitable for hand-work at the mines of the Price-Pancoast Coal Company in the anthracite field of Pennsylvania. In general, all the veins originally were developed by driving chambers 26 ft. wide on 50-ft. centers, leaving pillars approximately 24 ft. wide. Second mining consisted of skipping the sides of the pillars to reduce their width to about 12 ft., after which the sections were flushed with culm. The remaining 12-ft. pillars, abandoned as unminable, are now being recovered with conveyors.

In reopening the crushed sections, single gangways are cut through the pillars as far as possible, thus eliminating the handling of caved rock. These are generally driven 11 to 12 ft. wide and are forepoled with 4-in. timbers. Recovery of the chamber pillars is done with shaker conveyors as the gangway advances and takes place in two stages; first skipping up the side, and, second, drawing back the remainder of the pillars by open-ending.

Preliminary work in starting a pillar is done by hand until the opening is in far enough for the shaker engine to be set. In driving up the side of the pillar, the opening is about 6½ ft. wide. In bringing back the remainder of the pillars, the coal either is pitched out to the chute or an angle section may be inserted in the conveyor to turn it around the end of the pillar. To protect the gangway, a row of stumps is left on both sides until the last of the pillars is recovered. These stumps are then removed on the retreat, and the gangway is abandoned.

In the first half of December, 1932, the average number of shaker conveyors working was 54 and the daily conveyor production was 1,433 gross tons, making the average output per machine per day 26.6 tons. The majority of the conveyors were operated two shifts of eight hours each; 19 were worked three shifts; and four operated one shift. Total machines on hand were made up of the following types: Eickhoff, electric, 13; Eickhoff, air, 12; Vulcan, 41; Schmidt-Kranz, 5; Ladel, 1. Power is supplied by 7½ and 10-hp. Westinghouse motors.

In general, two men, a miner and laborer, comprise a conveyor crew and do all the work, though a few crews are made up of either three or four men. Compressed-air drills are used, and all firing throughout the mine is done electrically. Average number of man-shifts per day in producing 1,433 gross tons was 219, making the average production per man per shift 6.5 tons.

All shaker engines are mounted on concrete foundations. The company feels that the use of jacks for holding the drives would be impracticable in the squeezed and settling ground encountered. The conveyors, where possible, have the grade in their favor. Occasionally, however, it is necessary to bring the coal upgrade, on adverse slopes up to 5 degrees. It frequently is necessary to turn the conveyors where the pillar changes direction, and to do this, short angle sections are inserted between the regular chute sections.

Accident Experience and Cost in Tennessee Coal Mines

Digest from paper by F. E. Cash, U. S. Bureau of Mines Bulletin

DURING THE PERIOD 1926 to 1931, inclusive, the State of Tennessee produced 33,245,840 tons of coal with 142 fatal accidents in and around the mines. The fatality rate per million tons mined was below or better than the average for the United States for each year except 1926, when the State had its only major disaster, resulting in the death of 31 men, during the six-year period.

It has been possible to obtain the direct cost of accidents from 13 mines. By direct cost is meant money spent by the operating companies for medical attention, hospitalization, and compensation. These 13 mines cover those of various ages, sizes, and classes in Tennessee; among them are slope mines, drift mines just above water level and drift mines high up on the mountainsides with long surface inclines, new mines and old mines, large producers and small producers, mines abundantly equipped with machinery and mines in which practically all work is done by hand, and also gassy and so-called nongassy mines. Although there may be mines in the State with better or worse accident experience, these 13 mines may be considered representative.

Summary of Accident Data for Thirteen Tennessee Mines in the Period 1926-1931

Tons coal produced	3,703,547
Man-days worked	1,601,987
Fatal accidents	21
Total permanent disabilities	4
Part permanent disabilities	42
Temporary disabilities	705
Total lost-time accidents	772
Total days lost	218,993
Days lost per accident	283.7
Tons coal per accident	4,797
Tons coal per day lost	16.9
Direct cost, cents per ton	5.21
Frequency	60.25
Severity	17.09

Falls of Roof and Coal in the Coal Fields of Utah

Digest from paper by Herbert Tomlinson, Bulletin, U. S. Bureau of Mines

THIS REPORT is a summary of the data obtained at 12 mines, representing the various physical characteristics of the principal coal beds and indicative of approximately 70 percent of the total production of Utah. Based on this study, suggestions for the prevention of accidents due to falls of roof and coal are offered for consideration. Not all the suggestions are applicable to every mine Some are being followed at various mines, and some should be followed at all mines.

Methods of pillar recovery should be planned so that room pillars may be recovered when rooms have advanced the required distance. A uniform retreat should be made on predetermined break lines, so that excessive areas of standing pillars may be avoided.

The practice of slab-cutting pillars should be abolished, and the crosscut or pocket and stump method should be adopted, with pockets not exceeding 24 ft. in width.

Uniform entry, room, and pillar widths should be adopted at each mine to fit the conditions.

In order to avoid breaking the immediate roof by blasting, shot holes should be placed not nearer the roof than 12 in. and parallel with the roof.

All working places exceeding 12 ft. in thickness should be furnished as standard equipment, with a straight, hardwood, metal-tipped rod 1½ to 2 in. in diameter for testing roof.

Systematic methods of posting to suit the conditions should be employed in rooms and in pillar recovery. The miners should not be expected to use their own judgment in posting.

Methods of supporting the side by the employment of sprags should be adopted. All overhanging coal that can not be taken down should be spragged.

The employment of roof jacks with a tie for a cap piece, as temporary or safety posts in connection with mechanical loading units would be a desirable feature.

The use of 40 and 60 pound relaying rails for crossbars on haulage ways and air courses should be extended wherever possible.

All mines should be so divided into districts, with a competent certified official in charge, that visits, not exceeding two hours apart, may be made to each working face during the working shift.

A study should be made to increase the illumination of the working faces in coal beds exceeding 12 feet in thickness.

Compressed Air for Modern Coal-Mining

Digest from paper by R. D. Currie, U. S. Bureau of Mines, January, 1933

COMPRESSED AIR for coal cutting and drilling has proved its economy at Mine 8 of the Jamison Coal & Coke Co., Fairmont, W. Va. Eight mining machine crews and three drill crews of two men each undercut and drill 95 percent of the total production.

The coal is undercut by arowall mining machines with a 7-ft. cutter bar. These machines are the Jeffrey 29-C, similar to the electric machines, except that they are driven by compressed air. There are two separate motors required for their operation. The main motor is a turbo-type; rated at 50 hp. when operating at an air pressure of 100 pounds per square inch. The tramming engine is a standard make of internal-valve, reciprocating engine, manufactured by the Dake Engine Co., rated at 10 hp. The hose reel is mounted with the machine and will carry 400 to 500 ft. of 1⅜-in., high-pressure, rubber-covered hose. This reel is actuated through a clutch from the Dake engine and it was observed that the machine operators handled the hose with as much ease and dispatch as electric-machine operators handle their power cables.

Continuous daily performances have shown remarkable results, as exemplified by one of these machines which cut 35 places, day after day, along a pillar line. The estimated tramming required to cover this section slightly exceeds 1 mile; the average square feet of undercutting per shift was more than 2,700 and the resultant output 875 tons per shift. The high record for any one machine is 42 places cut on a single shift, and the average number of places at this time is 12, which makes approximately 300 tons per crew per shift.

Compressed-air jack-hammer drills—Sullivan Type DP 32—are used for drilling shot holes. Three shots are required to break the coal; one center and two rib. At the time these studies were made, three drill crews of 2 men each were drilling all of the shot holes for the entire mine and were averaging 95 places per shift, or a total of approximately 2,000 ft. of holes per shift for the three crews.

Compressor Plant

The compressed-air plant is inside the mine, approximately 4,800 ft. from the main hoisting shaft. It consists of five electrically driven, 2-stage, Ingersoll-Rand air compressors. One attendant looks after the entire plant and the five compressors have a total of 852 connected horsepower.

The main transmission lines, a 6-in. and a 5-in. line, extend from the compressor station to the first receiver. These two lines have a rated capacity of 8,884 cu. ft. of free air per minute at 100 pounds pressure per square inch. This receiver is primarily an after-cooler and moisture trap.

From this point, a main 6-in. line extends to a second receiver from which point branch transmission lines, 6 in. in diameter, extend to receivers at the butt entries. Distributing lines 3 in. in diameter are carried from these to connect to the 2-in. service lines which extend to within 50 ft. of every working place in the mine.

Ten Years of Fatal Accidents and Two Years of Accident Costs in Indiana Coal Mines

Digest from paper by C. A. Herbert, Bulletin U. S. Bureau of Mines

THE ANNUAL REPORTS show a total coal-mine production for Indiana of 10,887,499 tons in 1930 and 9,056,810 tons in 1931. Dividing these tonnages into the approximate premium costs for these same years gives an accident cost of 6.7 cents per ton in 1930 and 6.4 cents in 1931; this cost includes only the direct payment in compensation and the medical and hospital cost, but does not include any of the multitude of indirect costs, such as loss of tonnage, loss of time of workers other than those injured, and other items of similar nature.

The following table compares essential data on Indiana coal-mine accidents for the years 1930 and 1931. The comparison is not favorable for 1931. Although the explosion that occurred in 1931 is accountable in part for this, yet if the 28 fatalities due to the explosion are ignored, the comparison is still unfavorable.

Essential Data on Coal Mine Accidents in Indiana During the Fiscal Years 1930 *and* 1931

Item	1930	1931
Average employes	10,698	9,948
Coal mined, tons	10,887,499	9,056,810
Man-days worked	1,728,974	1,440,005
Fatalities	23	65
Lost-time accidents	2,303	2,248
Compensable accidents	629	1,113
Days lost from compensable accidents	127,659	342,186
Compensation paid	$191,258	$372,249
Days lost per compensable accident	54	152
Coal mined per fatality, tons	473,369	139,335
Coal mined per lost-time accident, tons	4,607	4,029
Coal mined per compensable accident, tons	17,309	8,139
Average sum paid per compensable accident	$304	$334
Premium cost per lost-time accident	$320	$262
Average days lost per compensable accident	203	307
Cost of compensation insurance, cents per ton	6.7	6.4
Frequency rate	170	195
Severity rate (compensable accidents only)	9.2	30.2

Mine Roofs in the Pittsburgh Coal Bed

Digest from paper by J. W. Paul and L. N. Plein, Bulletin U. S. Bureau of Mines

THE IMMEDIATE ROOFS at these mines are similar in character, consisting, in ascending order, of a draw slate, roof coal, shales, and sandstones. The draw slate ranges in thickness from 2 to 36 in. and is very rarely missing. The roof coal ranges in thickness from 5½ to 22 in. and often contains beds of shale ½ to 12 or more in. in thickness. Overlying the roof coal are beds of shales and

sandstones varying in thickness, usually containing a bed of sandstone at least 10 ft. thick about 10 to 20 ft. above the coal. To extract the coal the draw slate must be taken down as the working face advances. The roof coal then forms the temporary roof, and if the mining in each working place proceeds regularly falls of roof are not likely to occur.

In rooms and pillar places the roof coal plus the timber furnishes sufficient support to hold the roof material for the time usually required to mine out the room and the room pillar. If the room is allowed to stand for considerable time the roof will weaken and break, the height to which the roof will fall depending partly upon its make-up but principally upon the time it is left exposed.

On haulage entries, which must remain open for many years, the roof deteriorates and falls, but it soon arches when the sandstone or sandy shales 10 to 20 ft. above the coal are reached. The practice at these mines is to allow this arching to take place rather than to erect timbering to prevent it.

In pillar retreat work no trouble is experienced with the falls that occur in the gobs as the rib lines retreat. These falls occur regularly and soon block up. The roof sometimes holds up for as much as 60 ft. inby the pillar stumps, then the roof begins to take weight, the posts bend and break, and the roof falls to the coal stump. Summarizing, the action of the roof should not add to the difficulties of roof control because gob falls occur regularly, the roof coal and systematic timbering furnish ample support in rooms and pillar pockets, and after the roof arches on haulage roads it is strong and relatively safe.

One objection that can be made is that too much territory is opened up for a given production. This is not the fault of the system of mining but of the management. There is a general tendency to develop new rooms rather than to extract the coal in room pillars already developed. When rooms are left standing, recovering the room pillars later, after the immediate roof has weakened, becomes more hazardous. Some system of development that offers greater concentration of work would appear to be of advantage.

Sinking Shaft at Minas de Matahambre

Technical paper presented at February, 1933, meeting, American Institute of Mining and Metallurgical Engineers, by Dudley D. Homer and Robert H. Cromwell—From "Explosives Engineer," February, 1933

A NEW SHAFT has recently been completed at Minas de Matahambre, a Cuban mining corporation with mines located in the Matahambre district about 100 miles westerly from Havana in the Province of Pinar del Rio. The ore bodies occur as large, irregular pipes, usually with lenticular cross-sections of primary chalcopyrite locally associated with quartz and pyrite, in three well-defined, mineralized fracture zones. The mines are equipped with three shafts, but practically all production will be hoisted eventually through No. 2.

Work on No. 2 shaft was started in January, 1929. The total depth as of September 1, 1930, was 2,057 ft. and it is planned to sink an additional 400 ft. as soon as possible, cutting stations on the 23rd and 24th level and installing an additional skip-pocket on the 24th level. All of these levels will be spaced at 150-ft. intervals.

No. 2 shaft has four compartments. Compartments Nos. 1 and 2 each has 4 ft. 8 in. x 5 ft. inside dimension. These are for the main hoist skips of 102.5 cu. ft. capacity and an ore load of 5 tons. Compartment No. 3 has 4 ft. 8 in. x 5 ft. inside dimension and is for the chippy hoist. Compartment No. 4 is the manway and has an inside dimension of 5 ft. 6 in. x 5 ft., and is for the chippy hoist counterbalance, ladderway, water column, air line, power, light and signal cables. The shaft was lined with 8 in. of reinforced concrete from the collar to a depth of 70 ft. and steel sets are spaced at 6 ft. intervals from the collar to a depth of 1,045 ft. below; below this at 5-ft. intervals.

There is practically no surface soil at the shaft site. The shale which is exposed at the surface is oxidized and considerably decomposed for a depth of 70 ft. No unusual difficulties were experienced in sinking through this material and no special methods used. The cost per foot for preparing the site and sinking the shaft to a depth of 2,057 ft. was as follows:

Total labor per ft.—sinking, timbering, concreting	$66.02
Supplies	66.63
Power	11.66
General expense	21.22
Total preparing site and sinking equipment	18.11
Total completed shaft per foot	$183.64

Cost of shaft equipment installed was as follows:

103-ft. steel head frame, complete	$17,378.46
Surface steel skip bins	10,060.80
Jockey tower	1,821.62
Skips and cages	5,671.58
Hoist house and crane	24,214.35
Hoist cables	4,234.30
Main hoist complete, including controls	129,094.46
Power lines, telephones, signals	17,970.88
Sub-station	2,252.09
Pumps, water lines, and air lines	18,120.89
Boarding house, bunk house, and equipment	6,801.02
	$237,620.45

The hoist is double-drum, electrically driven by single reduction herringbone gears. The hoist equipment consists of direct-current motor for driving the hoist drums; a motor generator set with enclosed flywheel for supplying power to the hoist motor; complete electrical control equipment for the hoist motor and motor generator flywheel set. The electrical equipment has been furnished for the following duty cycle for balanced hoisting:

Vertical shaft (maximum lift)	feet	3,000
Weight of skip	pounds	7,000
Weight of cage	pounds	4,000
Weight of ore per trip	pounds	10,000
Rope diameter	inches	1⅜
Weight of rope per side	pounds	9,000
Maximum drum speed	r.p.m.	51
Maximum rope speed	r.p.m.	1,600
Time to accelerate	seconds	14
Time at full speed (3,000-ft. lift)	seconds	100½
Time to retard	seconds	10
Time to dump and load	seconds	12
Cylindrical hoist drums	ft.-diam.	10
WR^2 of drums, including head sheaves, lb.-ft.		2,500,000
Assumed mechanical efficiency hoist parts	percent	80

Mining Methods and Costs at Vanadium Mine

Digest from paper by Blair Burwell, U. S. Bureau of Mines Bulletin

THIS PAPER describes the method of mining a deposit of vanadium ore near Rifle, Colo. This vanadium deposit probably is the largest yet found in North America; between 150 and 200 tons of ore are mined daily and trucked to the mill.

The main entry is by a tunnel driven on the strike of an orebody which was first developed at the surface. A crosscut was driven from the main entry 475 ft. under the approximate center of the upper orebodies. From that point a 3-compartment ore pass, manway, and skipway was driven 280 ft. at a 55° slope to an intersection with the ore beds. From the crosscut and inclined raise other raises were driven to intersect the orebodies at intervals of about 120 feet on the dip, this interval being selected as the most economical slushing distance from level to level. The system of gravity raises and crosscuts in the footwall, designed to preserve haulage ways in the process of retreating, is continued in following the ore to the surface. Below the main level, extensions of the orebodies are followed with inclines and drifts, using small electric hoists for raising ore to the main tramming level.

Underground stoping is classed at this mine as thin-ore mining, thick-ore mining, and average-ore mining. Thin-ore mining involves the stripping and sorting of ore extensions as little as 10 in. in thickness. The greater part of such stoping is done by slushers using a special low type of

scraper 12 in. high and 5 ft. long. In some cases breast stoping is practiced. Thick ore is mined mainly by slushers, but a Butler-Nordberg air-operated shovel is used to some extent for breast stoping in high ore. Ore of average thickness is mined by slushers, using a Chinaman-type chute for loading into cars at the level.

Stoping follows a room-and-pillar system with rooms and pillars 25 ft. wide. Short crosscuts on 50-ft. centers are run into the footwall from the levels in the ore, which are at 120-ft. intervals on the dip; open chutes of Chinaman type are constructed at the ends of the crosscuts. A panel of ore 25 ft. wide and extending to the level above is then mined; the ore is removed by a slusher, operated by a double-drum, air-operated hoist mounted on a truck. The stope is extended by driving a 12-ft. face, using a center V cut, followed by side-slabbing rounds to the full width of 25 ft. After the first panels are mined from level to level the pillars are attacked, either from new chutes or by scraping on an angle from the old chutes.

TABLE 1.—*Summary of Costs per Ton Trammed, in Units of Labor, Power, and Supplies, July, August, and September,* 1931 (14,623 *Tons of Ore Mined and Trammed*)

	Development	Stoping	Total
A. Labor:			
Breaking (drilling and blasting) man-hours per ton	0.03	0.30	0.33
Timbering and filling, man-hours per ton	.....	.24	.24
Shoveling, man-hours per ton	.10	.90	1.00
Haulage and hoisting, man-hours per ton	.02	.26	.28
Supervision, man-hours per ton	.....	.01	.01
General, man-hours per ton	.....	.01	.01
Total labor underground, man-hours per ton	.15	1.72	1.87
Total ore trammed per 8-hour man shift, tons	53.33	4.65	4.28
Labor, percentage of total cost	.....	....	60.00
B. Power and supplies:			
Explosives, pounds per ton	.11	1.05	1.15
Total power, horsepower hours	.....	1.00	1.00

The Red Ore Mines of the Woodward Iron Company

Digest from paper by T. C. DeSollar, Woodward Iron Co., Bessemer, Ala; Technical Publication No. 499, American Institute of Mining and Metallurgical Engineers

THE RED ORE MINES, owned and operated by the Woodward Iron Company, are approximately 10 miles southwest of Birmingham, Ala. The property is developed by slopes driven in the ore formation, and the two mines now operating have a capacity of over 1,000,000 tons per year.

No. 1 mine is opened by a series of three slopes. The first slope is 30 by 10 ft. and extends an incline distance of 1,880 ft. on a dip of 23° 30′ to the first fault. Hoisting is done in a 15-ton self-dumping skip, driven by an 800-hp. motor. The second slope is 1,450 ft. on the dip and ore is hoisted in 2-ton cars in trains of five, by a 500-hp. motor-driven hoist. At the top there are scales and a rotary car dump, which discharges into the storage pocket for loading the skips of the top slope. The third slope after extending 1,010 ft. on the incline, flattens to the horizontal. Trains of five cars are handled by a 400-hp. motor-driven hoist in the inclined portion and by a trolley locomotive in the horizontal part. The normal daily output of this mine, when working two 8-hour shifts, is over 2,000 tons.

No. 3 mine is opened by two slopes. The top slope is on an 18° dip extending 3,636 ft. incline distance to a fault, and is 20 by 10 ft. in cross-section. Hoisting is done in balance with two 10-ton self-dumping skips equipped with an 800-hp. motor. The second slope is 2,539 ft. on the incline. A 700-hp. motor-driven hoist handles trains made up of either six 2¼-ton wooden cars or three 5-ton steel cars. No. 3 mine has an average production of over 3,000 tons per day of two 8-hour shifts.

Method of Mining

Headings are driven 12 ft. wide when loaded mechanically by scrapers. The scraper ramp, used for loading in the headings, is mounted on wheels and has a 25-hp. double-drum hoist. A heading crew consists of a drillman and helper, a drag engineer, a drag mucker, and a motorman.

Stopes are driven up the dip at 75-ft. intervals. Each stope neck is 12 ft. wide and is driven up for a distance of 25 ft. by hand. The stope is then widened to 30 ft. for scraper loadings and driven for an average length of 220 ft. and then a 10-ft. strip is taken off each side. This leaves a 25-ft. pillar between stopes and makes an estimated recovery of 65 percent in the first mining.

The ore is dragged from the stope over a ramp into the car by a double-drum 55-hp. hoist, mounted on a car, pulling a 3,100-lb. drag scraper of the box type. From three to five stopes are served by one drag engine, which travels under its own power on a track parallel to the ore-car track in front of the loading ramp. One drill crew will drill 14 to 18 holes to a depth of 8 ft. in a shift, and the blast will break from 100 to 125 tons of ore. A complete stope crew consists of two to three drill crews, a drag engineer, a motorman, and three drag muckers.

The tracks in the mechanical loading places are laid with 60-lb. rails. Creosoted ties are used on slopes and on permanent heading tracks. Cars in No. 1 mine are of wood construction, and those in No. 3 mine are of either wood or steel construction equipped with roller bearings. Trolley locomotives have replaced mule haulage in all mechanical loading places and in all headings beyond the last major fault in both mines. All important places in the mines, such as tunnels, slopes, intersections of headings and manways, and at underground hoists, pumps and drag engines, are electrically lighted. Telephone lines are arranged to provide communication between all central points on surface and underground.

THE FOLLOWING list of papers, published recently is of special interest to mining:

"Mining Petroleum by Underground Methods"—prepared by Geo. S. Rice and released by the United States Bureau of Mines, is a study of methods used in France and Germany and possible application to depleted oil fields under American conditions.

"Carbonizing Properties and Constitution of Chilton Bed Coal from Boone No. 2 Mine, Logan County, W. Va."— by A. C. Fieldner, J. D. Davis, R. Thiessen, E. B. Kester, W. A. Selvig, D. A. Reynolds, F. W. Jung, and G. C. Sprunk, and released by the United States Bureau of Mines.

"Abstracts of Current Articles on Geophysical Prospecting, Including Index to Geophysical Abstracts Nos. 33 to 44"—compiled by Frederick W. Lee and released by the United States Bureau of Mines.

"Methods and Costs of Mining Ferberite Ore at the Cold Springs Mine, Nederland, Boulder County, Colo."—by William O. Vanderburg and presented by the United States Bureau of Mines.

"The International Conference on Mine Safety Research at Buxton, England, July, 1931"—by George S. Rice and released by the United States Bureau of Mines, is a report of the meeting of representatives of the national mine safety research organizations of the principal coal-producing countries which was called by the Safety in Mines Research Board of Great Britain.

"Shaft Sinking Methods and Costs, and Cost of Plant and Equipment at the Macassa Mine, Kirkland Lake, Ontario"—by G. A. Howes and Chas. F. Jackson and presented by the United States Bureau of Mines.

"Iron Ore, Pig Iron and Steel in 1931"—by H. W. Davis and presented by the United States Bureau of Mines.

"Zinc in 1931," General Report—by E. W. Pehrson and published by the United States Bureau of Mines.

"Lead and Zinc Pigments and Salts in 1931"—by E. W. Pehrson and published by the United States Bureau of Mines.

"Silver, Copper, Lead, and Zinc in the Central States in 1931"—by J. P. Dunlop and H. M. Meyer, and released by the United States Bureau of Mines.

(Continued on page 38)

PERSONALS

Donald A. Callahan

President, Callahan Zinc-Lead Company, and Newly Elected Director of the American Mining Congress

E. D. LEISENRING, Stonega Coke and Coal Company, Philadelphia, Pa., has been elected a director of the United Gas Improvement Company.

W. VAL DECAMP has returned to his home at Berkeley, Calif., after a few weeks visit in the East during January.

SIDNEY NORMAN, formerly of the Pacific Northwest, more recently identified with the Canadian mining industry, has returned to the States and will be located at Beverly Hills, Calif.

LUCIEN EATON is in charge of the Mining Methods program for the annual meeting of the American Institute of Mining Engineers.

SAM A. LEWISOHN, Miami Copper Company, recently completed an inspection trip to the mines at Miami, Arizona.

J. F. CALLBREATH, Secretary, The American Mining Congress, was a visitor in Boston early in February.

CHARLES A. MITKE, of Phoenix, Arizona, is examining gold properties in northern Mexico.

DANIEL HARRINGTON, U. S. Bureau of Mines, has been appointed chief of the Health and Safety Branch of the Bureau.

R. R. SAYERS, formerly head of the Health and Safety Branch of the Bureau of Mines, has been appointed medical officer in charge of Industrial Hygiene and Sanitation of the Public Health Service.

THEODORE MARVIN, Editor, the Explosives Engineer, was guest speaker at a meeting of the John Markle Mining Society.

S. A. SCOTT, Vice President, The New River Company, is in Bermuda for two months.

K. U. MEGUIRE, President, Dawson-Daylight Coal Company, has been elected President of the West Kentucky Coal Bureau.

CHARLES DORRANCE has been elected President of the Penn Anthracite Coal Company.

J. W. SEARLES, President, Pennsylvania Coal & Coke Company, was elected Vice President and a Director of the Central Pennsylvania Coal Association, at its recent meeting.

NOAH SWAYNE has resigned as Vice President of the Great Lakes Coal & Coke Company.

H. B. HENDERSON, Texas Mining and Smelting Company, spent several days in Washington, during early February.

J. F. ERISMAN, former Colorado mining man, now resident of California, sailed early in February with Mrs. Erisman for several months in Europe.

A. G. MACKENZIE, Secretary, Utah Chapter, American Mining Congress has been in Washington for several weeks.

CLAY F. LYNCH has been elected to the Board of Directors and the Vice Presidency of the H. C. Frick Coke Company, filling the vacancy left through the death of Thomas Dawson.

M. D. VINCENT, Vice President, Rocky Mountain Fuel Company, has resigned that office, and will return to the practice of law.

D. D. MUIR, Vice President, United States Fuel Company, is a sponsor of the general economic conference held at the Hotel Utah, Salt Lake City, February 11.

W. MONT FERRY, President, American Silver Producers Association, recently presented the status of the Silver Industry to the Conference of Western Governors, held at Salt Lake City.

JAMES ORR ELTON received the James Douglas Medal from the A. I. M. E. at its recent annual meeting.

HARRY A. SCHULTZ has been appointed manager of the Bureau of Safety, Sanitation and Welfare of the United States Steel Corporation.

HAVE YOU HEARD—?

DECISION OF U. S. SUPREME COURT upholds tax on hydro-electric power generated and sold within the state. The contention in the case was that the tax was unconstitutional, in that it exempted production of electricity by use of oil or internal combustion engines.

ACCORDING TO MILO RENO, President of the Farmers' Holiday Association, a nationwide strike of farmers will occur unless the Roosevelt administration takes quick action.

AMERICAN HOTEL MEN'S ASSOCIATION to wage fight against taxation of hotels, saying that 25 percent of room rent goes to pay taxes.

THE NEW YORK HERALD TRIBUNE says: "The spectacle of the Senate of the United States, solemnly resenting the charge that it is corrupt, is a tragic-comic episode in the history of the nation."

ERNEST T. WEIR, Chairman of the board of the National Steel Corporation, strenuously opposes further wage cuts in the steel industry.

IN 1932 THE U. S. MINT at Philadelphia, turned out 20,030,750 coins, being over twice the value of coins minted in the two preceding years.

TARIFF COMMISSION announces that it plans to dispose of most of the 41 projects now before it, before the end of the present fiscal year.

PENNSYLVANIA RAILROAD has completed its transition from steam locomotives to electric power for passenger trains between Philadelphia and New York City. Twenty-two trains are now electrically operated.

ACCORDING TO R. G. DUNN & COMPANY commercial failures for the year 1932 reached the high record for all time, in both number and amount—but even that high record consisted of less than 2 percent of the mercantile concerns in the U. S. Ninety-eight percent of all the commercial concerns in the country have weathered the worst depression in history.

SEIBERLING REPORTS, published by the Seiberling Tire Company, believes that if this country wishes to save the gold standard, and revive not only gold but also general confidence, immediate attention must be given to the tariff and debts.

IN 1920 the total iron ore reserves of the Lake Superior District, were 1,562,267,393 long tons; in 1930—ten years later—the reserves for this District totals 1,426,577,333 long tons, a depletion of only 8.68 percent.

PRODUCTION OF NEW GOLD from mines throughout the world, reached a new high record during 1932 of 23,911,000 fine ounces, valued at $494,240,370.

TO AID ANTHRACITE PRODUCERS to regain lost markets, and to increase their own tonnage, railroads have agreed it is understood, to rate reduction of $1 a ton on hard coal moving west of Buffalo.

AN EXACT MODEL of the Hoover Dam and Power Plant, the biggest thing of its kind ever to be built by man, will be displayed at the Chicago Century of Progress.

ANNOUNCEMENT has been made of the "Official Souvenir Program" for the Roosevelt-Garner Inauguration, and will be the only program published covering all events.

NICHOLAS MURRAY BUTLER of Columbia University advocates the appointment of a Government Commission to "study and report" upon the causes of the Depression.

REPORTS FROM SEVENTY RAILROADS indicate 55.1 percent rise over 1931, in December.

THE TOTAL AMOUNT of electricity produced for public use in the U. S. in 1931, was 91,729,000,000 kilowatt hours. Of this amount 67 percent was produced by the use of fuels and the remainder by use of water power.

MUSEUM OF SCIENCE AND INDUSTRY, founded by Julius Rosenwald, will shortly house World's first man-made coal mine—a full sized operating bituminous coal mine, fully equipped and developed with special attention to detail.

T. H. O'BRIEN, Inspiration Copper Company, has been selected as Chairman of the committee which will supervise the distribution of the funds loaned the State of Arizona by the Reconstruction Finance Corporation.

DR. FRANCIS A. THOMAS, President, Montana School of Mines, has been selected as Chairman of the Montana Section, The American Institute of Mining Engineers.

C. F. KELLY, President, Anaconda Copper Company, is one of the fifty-five leading men in the United States, selected by Senator Reed Smoot, to give his views as to what has caused the depression, and suggest a remedy.

WALTER H. ALDRIDGE was presented the William Lawrence Saunders Medal, at the recent meeting of the A. I. M. E.

B. M. CLARK, President, Rochester & Pittsburgh Coal Company, has been re-elected President of the Central Pennsylvania Coal Operators Association.

R. L. IRELAND, Vice President, Hanna Coal Company, was in Washington during February.

A. CRESSY MORRISON, Union Carbide & Carbon Corporation, New York City, attended a special meeting of The National Research Council, in Washington, February 15. Mr. Morrison is a member of the Executive Board of the Council, and has just recently returned to the United States, after visiting his daughter in Honolulu.

WALTER L. ROBISON has been elected to the Presidency of the Youghiogheny & Ohio Coal Company, of Cleveland, Ohio.

W. C. STRATTON has been made general superintendent of the Gary, West Virginia, operations of the United States Coal & Coke Company.

G. MARSHALL GILLETTE, formerly Vice President, The Pittston Company, Scranton, Pa., was recently appointed head of the Northwestern Mining & Exchange Company, at DuBois, Pa.

ASSOCIATION ACTIVITIES

Coal Division of the American Mining Congress to hold annual Spring Meeting in Pittsburgh

EARLY IN FEBRUARY, Mr. J. B. Warriner, President of The American Mining Congress, announced that the annual May meeting of the Coal Division, of that organization, would be held at the William Penn Hotel, Pittsburgh, Pa., May 8 to 12. This convention, with which is held the National Exposition of Coal Mine Equipment, has been held for the past nine consecutive years at Cincinnati, Ohio. The acceptance of the Pittsburgh invitation for the tenth Annual Convention marks a distinct change and offers a new setting, in the heart of the coal fields, for the convention, which is the greatest event in the coal year. Mr. Warriner, who is President, The Lehigh Navigation Coal Company, has extended an invitation to the coal industry to join in the discussions which will attempt to present the latest information of practical production problems.

Mr. L. N. Thomas, Vice-President, The Carbon Fuel Company, of Carbon, W. Va., has been appointed as National Chairman of the Program Committee, which is divided into seven major sections, with the following operating men, serving as District Chairmen: J. William Wetter, Vice-President, Madeira Hill & Company; H. B. Husband, Manager, Coal Properties, C. & O. Railroad Company; Harry J. LaViers, Vice-President, The Northeast Coal Company; J. Russell Kelce, Sinclair Coal Company; C. J. Sandoe, Vice-President, The West Virginia Coal Company of Illinois; two additional chairmen will be selected, one representing anthracite and the other the far Western district.

Meetings of the Divisional groups were held late in February, and a final meeting of the District Chairmen, to complete the Program, will be held March 11.

The National Exposition, which is held in conjunction with the convention, is already an assured success. It will be under the direction of Ralph C. Becker, Chairman, Manufacturers' Section, The Coal Division; Mr. John T. Ryan, President, Mine Safety Appliance Company, First Vice Chairman; George R. Delameter, W. S. Tyler Company, Second Vice Chairman, and C. B. Officer, Sullivan Machinery Company, Third Vice Chairman. L. W. Shugg, General Electric Company, will act in an advisory capacity as Director of Exhibits.

The management wishes to announce that the Exposition Halls, at the William Penn Hotel, are comparable to the Exposition Hall at Cincinnati, and will house much the same character of exhibit. At this writing (February 20) some 60 companies have been assigned space, and indications are that the entire exposition will be sold out by the first of April. The diversity of equipment to be shown will insure the maximum of information available to the groups of practical coal operating men, who will come prepared to hear and see just how production costs may be reduced.

The program to be presented will be finer, if possible, than that of previous years, and will constitute an inspection trip through a model mine, in that the very latest practice will be presented for every phase of mining. It has been suggested that one entire session shall be devoted to the entirely new things developed for the industry.

The dates are, tentatively, May 8 to 12, although it may be decided at the final meeting of the Program Committee to concentrate the papers into a three-day convention, in which event the meeting will be May 10, 11 and 12. Local committees are being formed to work out a series of trips throughout the district, to points of interest, and announcement will shortly be made concerning this phase of the program.

Plan to attend, plan to send the largest number of the operating personnel. It will more than pay any company to take full advantage of the marvelous opportunity offered through this year's meeting. Everything will be housed under one roof, with full facilities for comfort and convenience.

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THE AMERICAN ZINC Institute will hold its regular Annual Meeting of the membership on Tuesday, April 18, 1933, in New York City. At this meeting reports of officers will be submitted, and eight directors elected for a three-year term. The Board of Directors will then hold a meeting, at which officers of the Institute will be elected for the ensuing year. Decision to hold the Institute's meeting in New York, rather than in St. Louis, as has been the usual custom, was recently made by the Executive Committee. It was felt that in the interests of economy, both to the members and the institute, the expense of a large convention should be eliminated for the present year. Members who are unable to attend the New York meeting will be enabled to vote by proxy, and will receive full copies of reports covering the past year's work. Detailed arrangements for the meeting, including place and hour, will be announced at an early date.

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AMERICAN INSTITUTE OF MINING AND METALLURGICAL Engineers held its annual meeting in New York City—their 142nd—February 20-23. Their program consisted of interesting papers on Mining Methods, Mining Geology, Milling Methods, Coal Preparation.

A strong effort was made to have the program of equal importance and interest to those presented in previous years, when more favorable economic conditions existed. There was a fine selection of papers, lectures and illustrated talks.

At the annual dinner at the Commodore, at which President Scott Turner presided as toastmaster, the William Lawrence Saunders Medal was presented to Walter H. Aldridge and the James Douglas Medal to James Orr Elton. The new president introduced H. N. Eavenson, of Eavenson, Alford and Hicks, well-known consulting engineers.

The following sections held special sessions:

Mining Methods, Mining Geology, Milling Methods, Coal Division, Metals Division, Iron and Steel Division, Non-Metallic Minerals, Petroleum Division, Mineral Industry Education Division.

Excellent entertainment was a feature, with the annual dinner, special luncheons and a meeting of the Woman's Auxiliary.

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NATIONAL COAL ASSOCIATION plans Commercial and Technical Research Laboratory.

A broad program of research, in which efforts along technical and commercial lines would be tied together, was outlined to the Technical Research Committee of the National Coal Association at a meeting in Washington, January 25, by Chairman John C. Cosgrove and Managing Director Grimes of the Committee of Ten. Eleven outstanding coal-originating railroads were invited to attend and the railroad attendance record was 100 percent.

It was unanimously decided to launch a movement for the establishment of a

laboratory to promote applied research. The plan comprehends a purely national effort to attack problems of interest to the industry as a whole, a common effort against oil and gas to expand the coal market.

A charter will be secured in February for Bituminous Coal Research, Inc., and all operators in attendance by resolution agreed "to serve as members of an organization committee." John C. Cosgrove was elected Chairman and was authorized to name a committee of five to carry on the active work of promoting the organization. This committee is composed of Douglas Gorman, Baltimore, Chairman; Howard N. Eavenson, Pittsburgh; Wilbur Marshall, New York; W. D. Ord, Alexandria, and W. M. Ritter, Washington.

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Kentucky Bureau Elects Officers

THE WEST KENTUCKY Coal Bureau, meeting in Louisville, named officers to serve during the year as follows: President, K. U. Meguire of the Dawson Daylight Coal Company, Louisville and Dawson, Ky.; Vice President, R. R. Kirkpatrick, Beach Creek Coal Company, Beech Creek, Ky.; Secretary, re-elected, C. E. Reed, Louisville.

The new Executive Committee consists of J. E. Palmer, Diamond Coal Company, Providence, Ky.; C. F. Richardson, West Kentucky Coal Company, Sturgis; A. W. Duncan, W. G. Duncan Coal Company, Greenville, Ky.; Brent Hart, Hart Coal Corporation, Morton's Gap; C. M. Martin, Greenville Coal Company, Greenville; D. D. Duncan, Crescent Coal Company, Bevier, Ky.; C. D. Major, Beaver Dam Coal Company, Louisville and Beaver Dam, Ky.

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TO STRENGTHEN THE DISTRICT Association movement throughout the country, a luncheon meeting for officials and members of such organizations in all producing fields has been scheduled on the Annual Meeting program of the National Coal Association, June 15-16-17, in Chicago.

Chairman T. B. Davis of the Annual Meeting Committee is in receipt of acceptances from R. H. Sherwood of Indianapolis, who was invited to preside at the meeting, and from William G. Caperton of Charleston, W. Va., who was invited to lead the discussion, with respect to ways and means by which associations might more effectively serve their respective members and collaborate in common effort in the common interests of the industry. Mr. Sherwood is President of the Central Indiana Coal Company and Chairman of the Board of Coal Trade Association of Indiana. Mr. Caperton is Vice President of the Slab Fork Coal Company, Scotia Coal and Coke Company and South Side Company, and President of the Smokeless Coal Operators' Association of West Virginia. (*N. C. A. Bulletin*)

A. S. M. E. Metropolitan Section Meeting

AN UNUSUALLY COMPLETE symposium on Wood Preservation will be held at the Engineering Societies Building, New York City, on the evening of March 20, 1933, under the auspices of the Wood Industries Division of The American Society of Mechanical Engineers.

The following papers will be presented and discussed:

I. "Introduction to Wood Preservation, Including the Causes of Deterioration, the Theory of Treatment, Methods of Seasoning, and Processes of Treatment," by George M. Hunt, in charge, Section of Wood Preservation, Forest Products Laboratory, United States Department of Agriculture.

II. "Creosote and Creosote Mixtures," by R. S. Belcher, Manager, Treating Plants, Atchison, Topeka & Santa Fe Railway Company.

III. "Zinc Chloride," by L. C. Drefahl, Chemist, Grasselli Chemical Company.

IV. "Sodium Fluoride and Fluoride-Phenol Mixtures," by H. B. Bishop, President, Sterling Products Corporation.

V. "Zinc Meta-Arsonite," by Dr. L. P. Curtin, President, Curtin-Howe Corporation.

VI. "Fire-resistant treatments," by E. F. Hartman, President, Protexol Corporation.

VII. "Summary, to Include Miscellaneous Preservations, Uses for Treated Lumber, Etc., and a Bibliography," by George M. Hunt, in charge, Section of Wood Preservation, Forest Products Laboratory, United States Department of Agriculture.

The marked economies which the railroads and public utility companies have effected through the use of treated ties, lumber and poles have aroused a widespread interest in the subject. Among other fields using treated wood are:

Architectural—Sleepers, underflooring, finished flooring, sash, fire-resistant doors and trims, etc.

Mining—Mine timbers and ties.

Industrial Plants—Ties, exposed wooden structures, roof planking, flooring, sash, etc.

Marine—Piers, wharves, etc., and fire-resistant interior trim for vessels.

The meeting will be open to all interested, whether or not they are members of the Society.

■ ■ ■

Central Pennsylvania Coal Producers Association

ONE OF THE LARGEST annual meetings in the history of the Central Pennsylvania Coal Producers' Association was held at Altoona, January 20. Reports from the Research and Power Committees were received and Attorney August Gutheim, Washington, led a discussion on the Eastbound Rate Case. B. M. Clark was re-elected President, J. W. Searles was elected Vice-President and Walter A. Jones was reelected Secretary-Treasurer. A Board of Directors of 20 members was elected as follows: James H. Allport, M. J. Bracken, I. A. Boucher, J. R. Caseley, B. M. Clark, G. Dawson Coleman, John C. Cosgrove, William J. Faux, G. M. Gillette, H. H. Hamilton, F. D. Lambert, William Lamont, F. D. McNellis, Charles A. Owen, Rembrandt Peale, J. W. Searles, R. M. Shepherd, G. Webb Shillingford, J. William Wetter and F. H. Wigton. (*N. C. A. Bulletin*)

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MINE INSPECTORS' INSTITUTE OF AMERICA will hold its annual meeting May 8-9, 1933, at William Penn Hotel, Pittsburgh, Pa., at the same time that The American Mining Congress holds its annual May meeting, at the same hotel. The simultaneous dates were selected in order that members of the institute may have an opportunity to view the comprehensive exhibit, which is a feature of the Mining Congress' meeting. John T. Ryan, President, Mine Safety Appliances Company, and Vice-Chairman of the Manufacturers' Section of the Coal Division of the Mining Congress, is Chairman of the Program Committee. Thomas Moses, President of the H. C. Frick Coke Company, is general chairman of the local committee, which will provide entertainment for the institute.

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Colorado Mining Association Meeting

COLORADO'S MINING INDUSTRY needs a state centralized plant capable of handling a combination of ores, R. J. Walker told a joint session of the Colorado Mining Association and the Colorado Chapter of the American Mining Congress, meeting in the Continental Oil Building Auditorium, Denver, on January 18.

"The plants in the State today make a separation of various ores," he said. "The concentrates in many cases have to be shipped far from home. It is necessary to ship certain zinc concentrates to a plant in Great Falls, Mont. Other concentrates are sent to St. Louis, Mo. Great sums would be saved the industry annually if these ores could be handled in Colorado." William E. Greenawalt spoke on "Colorado's Industrial Opportunity." He said Colorado miners have been overlooking the fertilizer field, as an outlet for many of the by-products of ores mined in the State. John T. Joyce, head of the State Bureau of Mines, called attention to the fact that 131 new mines were opened in the State in 1932. Officers chosen by the Mining Congress were: Ex-Governor Jesse F. McDonald of Leadville, President; Edwin P. Arthur of Cripple Creek, First Vice President; Frank L. Jones, Idaho Springs, Second Vice President; John T. Bartlett of Denver, Third Vice President; C. W. Henderson of Denver, Fourth Vice President; Shrive B. Collins of Creede, Treasurer,

and R. L. Colburn of Denver, Secretary.

"False Economy" and "Monetary Economics" were the subjects of two speeches by Senator-elect Elbert D. Thomas of Utah on the 19th and a second speech was given at the annual Sowbelly dinner at the Brown Palace Hotel in the evening.

■ ■ ■

National Coal Convention to Meet at Chicago, June 15-17

CHICAGO, JUNE 15, 16 and 17, were chosen as the place and date for the 1933 convention of the National Coal Association by a committee meeting in New York, January 26. The selection was unanimous at the committee session which was presided over by T. B. Davis of New York and also attended by President C. E. Bockus of the National Coal Association and C. B. Huntress, Executive Secretary.

The morning and afternoon sessions of the first two days of the convention will be devoted to discussion of problems of primary interest to the coal industry. Co-operative marketing and related legislation, technical and commercial research, fuel distribution, credits, safety and workmen's compensations were the principal subjects listed for the program. Matters of general interest to the industry, including taxation, freight rates, etc., will be covered in reports and in general sessions. Various sectional meetings and group luncheon meetings are being planned.

In the selection of Chicago as the place for the 1933 convention, the committee was moved by several factors. The combustion and machinery exhibits planned for the World's Fair Exposition was an important drawing card, as well as the fact that the annual convention of the National Retail Coal Merchants' Association is being held in Grand Rapids, Mich., the three days previous, and that officers of the two organizations have voiced a hope that retailers might be able to spend the last three days of the same week in Chicago at the operators' convention. A third factor is that holding the meeting in Chicago will enable many members of the association West of the Mississippi to attend.

Further announcements of the plans for the meeting and the social program of the convention will be made during the next few months. The date for the annual dinner, at which an attendance of 800 to 1,000 are expected, has already been set for the evening of June 16. Saturday forenoon, June 17, will be devoted to an inspection trip to the combustion and machinery exhibits at the exposition. (*Black Diamond*)

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ALLOY STEELS

(*Continued from page* 24)

used in handling corrosive materials. Plates of carbon steel with a thin veneered surface of stainless steel offer advantages for the construction of equipment handling corrosive materials. Steels containing 4 to 6 percent chrome, 14 percent chrome, 17 percent chrome, and 18 percent chrome and 8 percent nickel are typical analyses of commercial steels also suitable for this purpose. They may be obtained in the form of sheets, shapes and castings.

The use of cast iron and plain carbon steel for parts subject to repeated heating and cooling results in objectionable growth and distortion. Recent tests show that the addition of 1.25 percent chromium to cast iron practically eliminates these. Cast iron with 1.25 percent chromium shows no growth up to about 1,100 deg. F. This furnishes an iron useful for many furnace parts, such as grate bars, arch bars, door jambs, door frames, door liners and all parts exposed to heat which in a short time causes cracking of plain cast iron because of growth.

Although locomotive piston rings are usually made of ordinary gray iron, it has been found that much longer life can be obtained by the addition of 0.50 percent chromium and 0.75 percent nickel to an iron containing 1.75 to 2.00 percent silicon. Iron of this analysis offers good machinability and at the same time has better wear-resisting properties.

Wire ropes and cables of stainless steel are now being made commercially and give much longer life than ordinary carbon steel in corrosive atmospheres. A recent issue of the *Iron and Coal Trades Review* gives the following information regarding the life of winding ropes in two different mines.

Colliery A—Upcast, Hot and Moderately Dry

810 yds. of 1¾-in. locked coil rope.
Stainless steel, 42 months.
Stainless steel, 42 months.
Ordinary steel, 16¼ months.
Ordinary steel, 23 months.
Ordinary steel, 15½ months.

Colliery B—Upcast, Very Hot and Saturated

Stainless steel, 42 months.
Ordinary steel, 29 months.
Ordinary steel, 13 months.
Ordinary steel, 9½ months.

THE CORROSION and oxidation of metal parts exposed to sulphur gases in roasting furnaces is another serious problem in the mining industry. This is usually accentuated by abrasion. Rabble arms, columns, blades and plates on furnaces used for the roasting of copper, lead and zinc ores do not give satisfactory results when made of ordinary cast iron or steel. They burn out, warp and break, interrupting operations. Water cooling has increased the life of these parts to some extent, but still better service has been obtained by the addition of chromium.

Recent tests have shown that the addition of 1.25 percent of chromium to cast iron will reduce oxidation losses as well as growth. Sixteen percent of chromium added to cast iron greatly improves its corrosion-resisting properties and its resistance to warping.

The best results, however, have been obtained from 28 percent chrome steel. This metal resists oxidation, abrasion and the attack of sulphur gases. Although the first cost is considerably greater than cast iron or carbon steel, service tests in many places, under the severest condititons, show that the longer life of 28 percent chrome steel more than justifies its use. This chrome steel is available in the form of castings, plates, bars and tubing. Service records show useful life of 2 or more years for rabble blades of 28 percent chrome steel, as compared with 1 to 2 months for cast iron under identical conditions. Great

(*Continued on page 36*)

UNIVERSAL VIBRATING SCREENS

"COST LESS"

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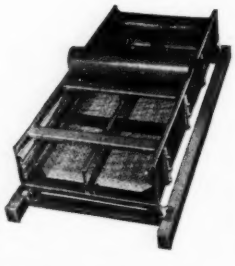

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MODERN MINING EQUIPMENT

The Cottrell Pneumatic Dry Concentrator

THE COTTRELL PNEUMATIC Dry Concentrator may be used for the recovery of free gold either from its ores or from placer gravel. It is essential, however, that the material be entirely dry as the separation is dependent upon the classifying action of a current of air. For placer mining operations a modified type known as the Cottrell Pneumatic Portable Dry Washer is manufactured. These machines are built in various sizes to handle from two to thirty-five cubic yards per hour.

The machine consists of a concentrating table with an enclosed riffle board. The riffle board is perforated for the purpose of admitting an air current, the function of which is to keep the material in partial suspension as it travels across the table. The washer is constructed in the form of a sluice and a shaking motion is imparted to it by means of an eccentric shaft.

Dry placer dredges of this type have an approximate capacity of 35 cubic yards per hour, and three men including the shovel operator, can handle the entire operation. A unit of this type is installed on the property of the Panamint Mining Company, 10 miles northeast of Ballarat, Calif. (*David D. Baker, The Mining Journal, Jan. 15, 1933.*)

FOOTE BROS. announce a complete line of motorized reduction units under the trade-mark "IXL Powered Gear." The new lines cover a wide range of application in sizes and types ranging from ½ hp. to 150 hp. capacity, and ratios ranging from 2 to 1, up to 3,600 to 1, the various types offered permitting use with right-angle straight line or offset drives, either horizontal or vertical.

Coal Dust Filter

THE KOPPERS-RHEOLAVEUR COMPANY of Pittsburgh, recently completed a three months' study of coal preparation in England and Europe where the dedusting of coal has been long used commercially. As a result of their investigations, they obtained the exclusive rights to build and install in the United States for use on coal the Birtley Aspirator and Waring Dust Filter, developed by the Birtley Co., Ltd., and Goodlass-Wall and Lead Industries, Ltd., of England.

This equipment is designed to handle and dedust damp coal or coal which is intermittently damp and dry and is adopted for removal of the finest dust—below 1/16 inch or 1/32 inch.

GENERAL ELECTRIC CO., Schenectady, N. Y., has issued a leaflet covering their circuit breakers for 600-volt railway service (Type MR).

STEPHENS-ADAMSON MFG. CO., Aurora, Ill., has issued a new booklet on "Redler Conveyors."

A LEAFLET describing the G-E Totally Enclosed Squirrel-Cage Motors, Type K, has been released by the General Electric Company, Schenectady, N. Y.

Portable Washing Plants for Gold Placers

AMONG PLACER OPERATORS a field has developed for plants to work small placer deposits which would not justify a large size gold dredge or where conditions (water, contour of ground, etc.) do not permit of dredge operation. In general, the portable washing plants for gold placers wash the gravel and stack the rocks and tailings the same as a large gold dredge, but a plant of this kind could not be operated profitably on a low-grade placer. No deposit now being worked with our machines will average less than 35 cents per cubic yard.

We have built plants in four sizes: 150 to 2,000 cubic yards per day. A heavy structural steel base is provided on which the hopper, feeder, gold saving equipment, stacker, turntable and power plant are mounted. Structural columns, properly braced, support the washing screen, transmission, etc. Most plants are mounted on railroad type trucks, but caterpillar trucks are also used, also wide faced wheels and heavy axles and one large plant was mounted on heavy wood skids. Where electric power is available each machine is motor driven through a V-belt drive; otherwise, a gasoline engine of the proper size is used.

Each screen is equipped with a suitable feed hopper, three-quarter side jackets, and bottom discharge pan. A nugget catcher is installed on the screen, and it is surprising to know that nuggets have been saved in deposits where tests showed only fine gold. The gold saving equipment selected depends entirely upon the characteristics of the gold to be recovered, the general plan being to install sluices or shaking riffles in front of the gold saving machine. Several of our plants are using the Ainlay centrifugal gold separator; others are using dredge-type jigs, Denver "Sub-A" flotation machines, Rickel placer machines, etc. (*R. A. Martin, Engineer, Morse Bros. Machinery & Supply Co., The Mining Journal, Jan. 30, 1933.*)

Hard-Surfacing Coal Bits

IN THE MINING INDUSTRY, the practice of hard-surfacing parts which are subjected to extreme wear has resulted in decided economies in many operations. Of especial interest in this connection is the recent development of the applications of Haynes Stellite welding rods to bits used on undercutting machines in coal mines.

Experimentation on a number of bits proved that one man could easily hard-face and grind 200 bits an hour and further investigations on a large scale revealed that these would cut three to ten times more coal than ordinary bits, give cleaner cuts and cause less screenings. When the coal is being cut, it takes two men 10 to 20 minutes to change bits in the machine, so that with hard-surfaced bits a saving of from 15 to 25 percent in this labor expense is accomplished.

The total life of an ordinary bit is approximately 10 sharpenings but when hard-faced, the life is increased approximately 30 sharpenings. This saving in bit steel cost is conservatively estimated to be over 50 per cent. A saving of from 22 to 27 percent in power consumption is obtained because hard-surfaced bits will stay sharp longer than the ordinary bits, giving the machine an easier load to carry. This process has proved so successful that it has become standard practice in many large coal mines throughout the country. (*Oxy.-Acetylene Tips, Feb., 1933.*)

MARSHALL FIELD, III, prominent New York capitalist, has recently been elected to the board of directors of the Westinghouse Electric and Manufacturing Company.

GENERAL ELECTRIC COMPANY, Schenectady, N. Y., is again distributing copies of their booklet, "Modernization Pays," setting forth examples of savings made through modernization.

Vibrating Screen

A NEW TYPE of vibrating screen has been announced by the W. S. Tyler Company of Cleveland, Ohio, who say that this is a radical departure from the Hum-mer electric screen which they have been manufacturing for some years. The new screen known as TYPE 400 VIBRATOR has four electric vibrators—one at each corner. The two vibrators at the upper or feed end are yoked together by a cross armature beam. The vibrators at the lower or discharge end are yoked together in the same manner. These armature beams are vibrated at 1,800 strokes per minute and transmit this to the screen cloth.

Automatic D. C. Motor Starter

AN AUTOMATIC D. C. motor starter is described in a recent bulletin of the Ohio Brass Company for use with pumps, fans, auxiliary blowers, and other motors which must run continuously without the attention of an operator. The mechanism consists essentially of a magnetic coil and armature. The coil is connected in series with the motor-shunt field, and is short-circuited by a contact made between two bi-metals. As the bi-metal contacts are heated by the field current, they open and connect the motor to the line. Upon the completion of this starting cycle, the motor continues to run connected directly across the line. The O-B Automatic Motor Starter has a low-voltage release feature which automatically releases at the interruption of power, and returns to that starting position. When power returns, the starter is already in starting position, and without personal attention, automatically brings the motor up to the rated running speed; and connects it directly to the line. (*O-B Haulage Ways, Feb., 1933.*)

MR. E. A. LIVINGSTONE has been appointed a sales representative of the Babcock & Wilcox Company and the Babcock & Wilcox Tube Company, with headquarters at 85 Liberty Street, New York City. Mr. Livingstone is engaged in the sale of the seamless steel and alloy tubular products of the Babcock & Wilcox Tube Company, and special process equipment including alloy castings and fusion-welded pressure vessels manufactured by the Babcock & Wilcox Company.

HAVING MADE NUMEROUS improvements in its line of vibrating screens, Link-Belt Company, Philadelphia, has recently completed a new illustrated catalog, No. 1362, giving sizes and types of screens available, with dimensions, descriptive matter, and installation views. Both unbalanced-pulley drive and heavy-duty positive drive type screens are covered, for the careful screening of crushed stone, coke, clay, coal, fertilizer, ores, gravel, cement, and similar materials.

THE AMERICAN SHEET AND TIN PLATE COMPANY, Pittsburgh, Pa., recently prepared and released a 12-page bulletin on Chromium Steel for Coal Screens. They announce that the bulletin is published "in the interest of economy, made possible by the use of 12 to 14 percent chromium steel for perforated coal screens." The bulletin—"American USS 12 Chromium Steel for Coal Screens"—is available for distribution and is an excellently presented argument in favor of the product.

PORTABLE LAMP & EQUIPMENT COMPANY, Pittsburgh, Pa., announce their new protective headgear, the "Cool Cap," which has been officially accepted by the Mining Section of the Pennsylvania Compensation and Inspection Bureau.

LINK-BELT COMPANY, 2410 West Eighteenth Street, Chicago, announce the Link-Belt automatic underfeed screw stoker. This stoker is at present made in a number of sizes suitable for heating plants and smaller steam plants—boiler capacities from 10 to 250 b. h. p.

McNALLY - PITTSBURGH MFG. COMPANY, of Chicago, has recently acquired the American rights to the Norton Collins dust-extraction system, designed to remove fine dust from coal without prescreening prior to washing, air cleaning, etc.

WORTHINGTON PUMP AND MACHINERY CORPORATION announce the following new publications:

Bulletin W-313-S1A. Size 12 to 36 in. Designed especially for irrigation, drainage, sewage, storm water, and condenser circulating service.

Horizontal Power Pump Bulletins.—D-412-B2. Forged fluid end high pressure power pumps. D-411-S1. Magma pumps for handling very viscous materials, such as magma in sugar mills, heated soap and grease fats. D-412-S5A. 2-in. stroke; capacities 6 to 12 g. p. m.

Vertical Triplex Power Pump Bulletins.—D-423-S12. Automatic receiver sets fitted with Multi-V-Drive; capacities from 1.6 to 39.2 g. p. m. D-423-S13. Heavy pressure pattern power pumps; capacities from 24 to 249 g. p. m. D-423-S11. Power pumps for general and boiler feed services; capacities from 2 to 39 g. p. m.

MOORE - HANDLEY HARDWARE COMPANY, Birmingham, Ala., has just placed a contract with Link-Belt Company, Chicago, for two solid carloads of Link-Belt chains, conveying and power transmission machinery.

A NEW eight-page supplement to its mechanical goods catalog on its "Highflex Transmission Belt" has just been issued by the B. F. Goodrich Rubber Company, Akron, Ohio. The supplement discusses function and varied operating conditions of transmission belting.

ALLOY STEELS

(*Continued from page 34*)

success has been obtained with this material in silver and gold mines in resisting corrosion from nitric acid.

In coal mines, where acid mine water quickly eats away ordinary ferrous and non-ferrous metals, 28 percent chrome steel has been found satisfactory for pumps, piping and fittings. In anthracite coal mines bronze has been replaced by 28 percent chrome steel for pumps for handling high-acid water and silt, with the result that no deterioration appeared after a year's service, whereas the bronze pumps had failed in 3 months. In another instance lead-bronze valve stems were good for about 150 hours, while 28 percent chrome steel valve stems in the same service showed negligible wear after 2,200 hours. A 6-in. centrifugal pump of corrosion-resisting bronze in highly acid and silty water showed a life of about 2 weeks, while a 28 percent chrome steel impeller was as good as new after a year's service. A chrome iron slush pump in a bituminous mine, working under abrasive conditions, eliminated costly and troublesome replacements where bronze impellers were formerly used. At another coal company the best bronzes showed 7.5 percent loss of cross section in 30 days, while 28 percent chrome steel in the same service was still in operation after 3 years.

This metal offers good resistance to abrasion as well as corrosion and has been found satisfactory for sand pumps. Metal of this composition has been used with satisfaction for pumps, piping and fittings in copper mines using the leaching process. Twenty-five percent chrome steel has also been used for various parts of equipment handling calcines requiring a combination of corrosion- and high temperature-resistance. It is used for jig and shaker screens, chutes, conveyor flights, baffles, shovels, bolts and nuts and other parts commonly attacked by the corrosive action of acid mine water.

MR. R. E. HOBART in a recent paper outlining "The Economies Through New Types and New Uses of Materials" describes the advantages and savings derived from the use of 12 to 16 percent chrome steel over bronze and ordinary steel for perforated shaker plates. The chrome steel offers notable resistance to abrasion and corrosion in acid waters used in the preparation of anthracite coal. He shows "relative cost in service" in favor of 12 to 16 percent chrome steel as follows:

12 to 16% chrome steel.....	$0.503
Bronze	0.755
Steel	1.00

(*Continued on page 37*)

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MINING EVENTS

(*Continued from page 18*)

669,000 tons in 1931, and bituminous coal shipments totaled 216,000 tons in 1932, as against 37,000 tons the year before. A marked increase in the quantity of British coke imported through Montreal was also noted during 1932, when shipments totaled 22,000 tons, as compared with 145 tons the previous year, it is stated.

■ ■ ■

Agriculture, Coal and Lumber Ask I. C. C. to Deflate Costs on Basic Commodities

A PETITION on behalf of the American Farm Bureau Federation, Farmers' Educational and Cooperative Union of America, National Coal Association, National Grange Patrons of Husbandry and National Lumber Manufacturers' Association for a general reduction of freight rates on basic commodities was filed January 25 with the Interstate Commerce Commission. The memorial petition declares there is a serious public emergency confronting the basic industries of the country that is aggravated by unreasonably high freight rates, which constitute a barrier to the revival of trade.

■ ■ ■

THE BLACK DIAMOND, Retail Coal trade paper, in its issue of February 18, reports a more favorable condition in the coal field than has been apparent in many months. It says:

"The ground hog evidently took pity on the coal industry and as a result from one end of the country to the other scenes of activity were witnessed in the past two weeks that have not occurred in several years. Mines in all sections were virtually swamped with orders, long distance telephone calls frequently were resorted to for the purpose of rushing shipments forward, and a much healthier tone can be reported in all branches of the trade.

"Stocks in retailers' yards vanished rapidly and the urgent calls for coal from both steam and domestic consumers showed how extensively the hand to mouth buying policy had been inaugurated. With the return of normal temperatures, the uproar has quieted down considerably, but there is still a fairly strong demand in all fields which is expected to continue at least for the balance of the month.

"The anthracite trade showed the first signs of activity in many weeks, due, of course, to the low temperature which prevailed all over the country. The demand for the larger size was urgent for a few days and retailers reported a large increase in the number of orders, particularly of the one and two ton variety. There was no change in the demand for the steam sizes.

"Low volatile coals from Pennsylvania found a much better market, with prices holding firm and production stepped up to take care of increased business. Low volatile slack was in better supply, due to the increased running time and prices held fairly well under the circumstances. Steam users made additional requisitions on the theory that stormy weather might interfere with rapid railroad movement and for that reason they felt some chance might be taken if they let their supply get too low.

"West Virginia smokeless domestic coals have been in good demand for the past two weeks, with some advance in price in the earlier period, although the warmer weather following the cold wave has resulted in some recession from the peak, when $2.50 was secured for smokeless egg. The peak for lump was $2, except on the premium grades, where $2.25 was secured. The nut sizes are in good demand, with prices ranging from $1.50 to $1.75 per ton. West Virginia high volatile enjoyed fair demand for the better part of the week, which lifted prices 15 to 25 cents a ton for lump coal. Mine run was inactive, with prices ranging from 85 cents to $1 for both steam and gas coal. Slack is still in the doldrums, with no change in price, leaving the range from 25 cents for the poorer grades to 50 cents for the best quality product.

"The Northwest, according to reports from Minneapolis and St. Paul, is enjoying the best trade in years in domestic coal. Retailers have been forced to replenish stocks to be in a position to take care of their customers for the remaining three months of coal burning weather. Shipments from the docks have increased sharply the past week and the carryover proved less than previously estimated. Dock and all rail prices remain steady and few changes are noted. Southern Illinois quotations, despite the better running time given mines in that section, remain unchanged.

"Birmingham reports Alabama mines getting back to normal again after a week's rush, which enabled the various operations to clean up all reserves under load. The warmer weather has caused considerable of a recession by some of the producers still having a back log which will enable them to run most of the month without cessation."

■ ■ ■

Publicity for Tax Returns Is Proposed in Senate

A BILL (S. 5531) to provide that income, war profits and excess profits tax returns shall be made public was introduced in the Senate January 26 by Senator Norbeck (Rep.), of South Dakota. The bill reads in full text:

That notwithstanding the provisions and limitations of any of the laws relating to internal revenue taxation, all income, war profits and excess profits tax returns heretofore or hereafter made upon which the tax has been determined by the Commissioner of Internal Revenue shall constitute public records and shall be open to examination and inspection under such rules and regulations as the Commissioner, with the approval of the Secretary of the Treasury, shall prescribe. (*U. S. Daily*)

■ ■ ■

ONCE THERE WAS a size of anracite known as lump. Next smaller was steamboat. Both of these long ago passed into oblivion, pushed over the edge of forgotten things by progress in the design of coal burning equipment and improvement in firing technique.

Egg is next below steamboat. Believing that egg will disappear from the market before long, Haddock Mining Co., Port Carbon, Pa., has made no provision for producing or shipping egg coal at its new breaker. This is the first breaker to be built, it is believed, which eliminates egg size. (*Business Week*)

■ ■ ■

ALLOY STEELS

(*Continued from page 36*)

Also in the case of centrifugal pump lining and impellers pumping bad water and sand mixture he gives the following figures in favor of chrome steel in "relative cost in service":

Manganese steel	$1.00
12 to 16% chrome steel	0.384

He also says that "chrome steels are being rapidly substituted successfully for other parts subject to high acid content along with abrasive material as sand in the water." Jig rubbing plates, jig grates, stationary dewatering screens in front of overflow type jigs, chute plates, piping and lining of pumps are typical examples.

In conclusion it appears that alloy steels have already found useful places in the mining industry. Up to the present time, manganese and chromium are the two elements added to steel to furnish resistance to wear. Chromium, vanadium, nickel and molybdenum are added to obtain increased strength, while high percentages of chromium make it possible to combat serious problems in corrosion and oxidation. It is hoped that this brief review of the special properties of alloy steels may contain some facts which will suggest other applications of the steels now available and bring to light other problems that require a solution.

Stainless clad steel, a recent development which has created wide interest in the mining field on account of its adaptability for use as an economical corrosion resistant is now being successfully welded for pipe work. Considerable research work has been carried on in spiral welding of pipe with the stainless surface on either the interior or the exterior of the pipe. According to R. C. Ingersoll, president of the Ingersoll Steel & Disc Company, Chicago (a division of the Borg-Warner Corp.), there is complete assurance of a perfect weld, and the stainless portion of the weld has the same corrosion resisting properties as the stainless surface of the pipe. For pipe and plate work the stainless layer may comprise from 5 percent to 50 percent of the total thickness of the metal, depending upon the pressures and degree of corrosion resistance demanded.

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INDUSTRY AND THE FEDERAL TAX PROBLEM

(*Continued from page 11*)

report made two recommendations. He recommended that the gasoline tax of 1 cent per gallon which was imposed, and was only to last up through this fiscal year, be extended up through the next fiscal year. That would have an estimated yield of something under $140,000,000—about $137,000,000. That is clearly necessary.

The Secretary also recommended that Congress should provide for a general manufacturer's excise tax at a low rate. You recall the history of that last year. Such a measure was worked out by the Ways and Means Committee in cooperation with the Treasury Department, but that measure was rejected in the House. It was worked out on the lines of the Canadian tax, which has been operating successfully for a number of years. That tax is very different from a general sales tax, which levies a tax on every sale made at any stage in production. That kind of tax would, of course, rest on the successive sales at different stages of production, and, of course, would impose unequal burdens on industries differently organized. It was estimated that some producers would, theoretically, pay one tax; while in organizations where it went through producer, manufacturer, to sellers to retailers would pay several taxes. The Canadians worked out a way around that difficulty by providing that the tax should rest in general only upon the final sale; only on the sale when the article was completed. So that if the mining industry produces its smelted ore in its final form and passes it on to the blast furnace, there would be no tax if the furnace is a licensed manufacturer. The furnace in turn would turn out the pick and pass it on to somebody to make into shapes. There would be no tax. But when the shaper gets the article going to be sold, and it is passed into a building, then the tax is imposed on that sale. Now that has to require a fairly large number of articles, but they work it out in Canada and it is operating. So that you have built under this act a single tax upon the article in its final form of manufacture, imposed at a low rate. There would be exemptions, of course, for agricultural products and fundamental food articles, but there would not be many exemptions—that is the point of this tax. Such a tax imposed at the rate of 2¼ percent—which was the rate the House took last year—would yield something like $355,000,000. Of course, the amount depends on just what the exemptions are. It would make possible the removal of the somewhat less productive and more annoying minor taxes which were imposed by the last act.

THE ADOPTION of such a tax would not only increase the revenue but it would give assurance that that result is going to be accomplished, carry weight with all those concerned with the credit of our Government, and develop an instrument which can be used fairly independently of the fluctuations in business to supply the needs of the Government, and clearly such a tax would also have a wholesome effect in restraining extravagance in Government expenditure. Here is a practicable measure which was worked out and put in the form of a well-considered plan which would have the effect of placing the Government revenues on an absolutely sound foundation. I think there is nothing so vital before Congress as this revenue question.

You know there are times when you have to give attention to even foundations and make sure they are resting securely, and we have one of those times now. So that it is my hope that those of you who have been concerned mostly with your individual problems are going to lend your weight and give your help and support to Congress in dealing in a broad way with this major issue.

MODERN MINING PRACTICE

(*Continued from page 29*)

"Gold, Silver, Copper, and Lead in South Dakota and Wyoming in 1931"—Mine Report, by C. W. Henderson and released by the United States Bureau of Mines.

"Gold, Silver, Copper, Lead and Zinc in New Mexico and Texas in 1931"—Mine Report, by C. W. Henderson and published by the United States Bureau of Mines.

"Chromite in 1931"—prepared by L. A. Smith and released by the United States Bureau of Mines.

"Gypsum in 1931"—prepared by R. M. Santmyers and Jefferson Middleton, and released by the United States Bureau of Mines.

"Asbestos in 1931"—by Oliver Bowles and B. H. Stoddard and presented by the United States Bureau of Mines.

"Manganese and Manganiferous Ores in 1931"—prepared by R. H. Ridgway and released by the United States Bureau of Mines.

"Vanadium Uranium and Radium in 1931"—by F. L. Hess and released by the United States Bureau of Mines.

"Mercury in 1931"—By P. M. Tyler and H. M. Meyer and published by the United States Bureau of Mines.

"Metal-Mine Fires and Ventilation"—by D. Harrington. Presented by the United States Bureau of Mines.

"Mining Laws of Cyprus"—by E. P. Youngman and presented by the United States Bureau of Mines. This is one of a series of digests of foreign mining legislation and court decisions that is being prepared in advance of a general report relative to the right of American citizens to explore for minerals and to own and operate mines in various foreign countries.

"Mining Laws of Iraq"—by E. P. Youngman and presented by the United States Bureau of Mines. Part of series referred to above.

"Mining Laws of Switzerland"—by Paul M. Tyler and presented by the United States Bureau of Mines. Part of series referred to above.

"Tectonic Position of Ore Districts in the Rocky Mountain Region"—by Paul Billingsley and Augustus Locke, Salt Lake City, Utah, and San Francisco, Calif. Presented to New York meeting American Institute of Mining and Metallurgical Engineers, February, 1933.

"A New Contribution to Subsurface Studies by Means of Electrical Measurements in Drill Holes"—by C. and M. Schlumberger and E. G. Leonardon, Paris, France. Presented to New York meeting, American Institute of Mining and Metallurgical Engineers, February, 1933.

"Principles of Flotation, II.—An Experimental Study of the Influence of Cyanide, Alkalis and Copper Sulphate on the Effect of Potassium Ethyl Xanthate at Mineral Surfaces"—by Ian William Wark and Alwyn Birchmore Cox, Melbourne, Australia. Presented to New York meeting, American Institute of Mining and Metallurgical Engineers, February, 1933.

You'll find your answers in Pittsburgh

Questions on every subject relating to coal mine operation will be introduced and discussed by mining men from all over America during the 10th Annual American Mining Congress COAL CONVENTION and EXPOSITION in Pittsburgh, May 8th to 12th.

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To find the correct answers to these or other disturbing operating questions that may now be troubling you can easily mean the difference between "profit" and "loss" on your books by the end of 1933.

Make your reservation now for the week of May 8th . . . you'll find your answers in Pittsburgh!

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Coal Convention & Exposition

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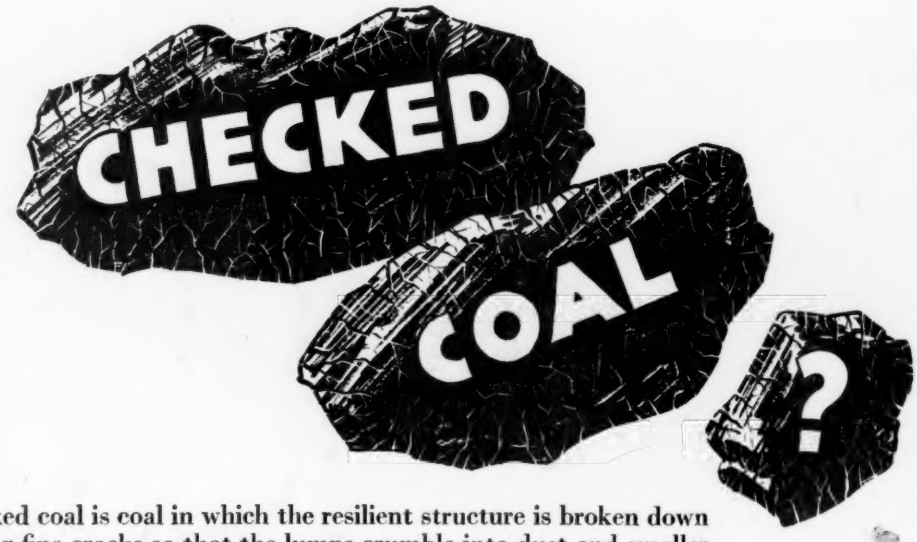

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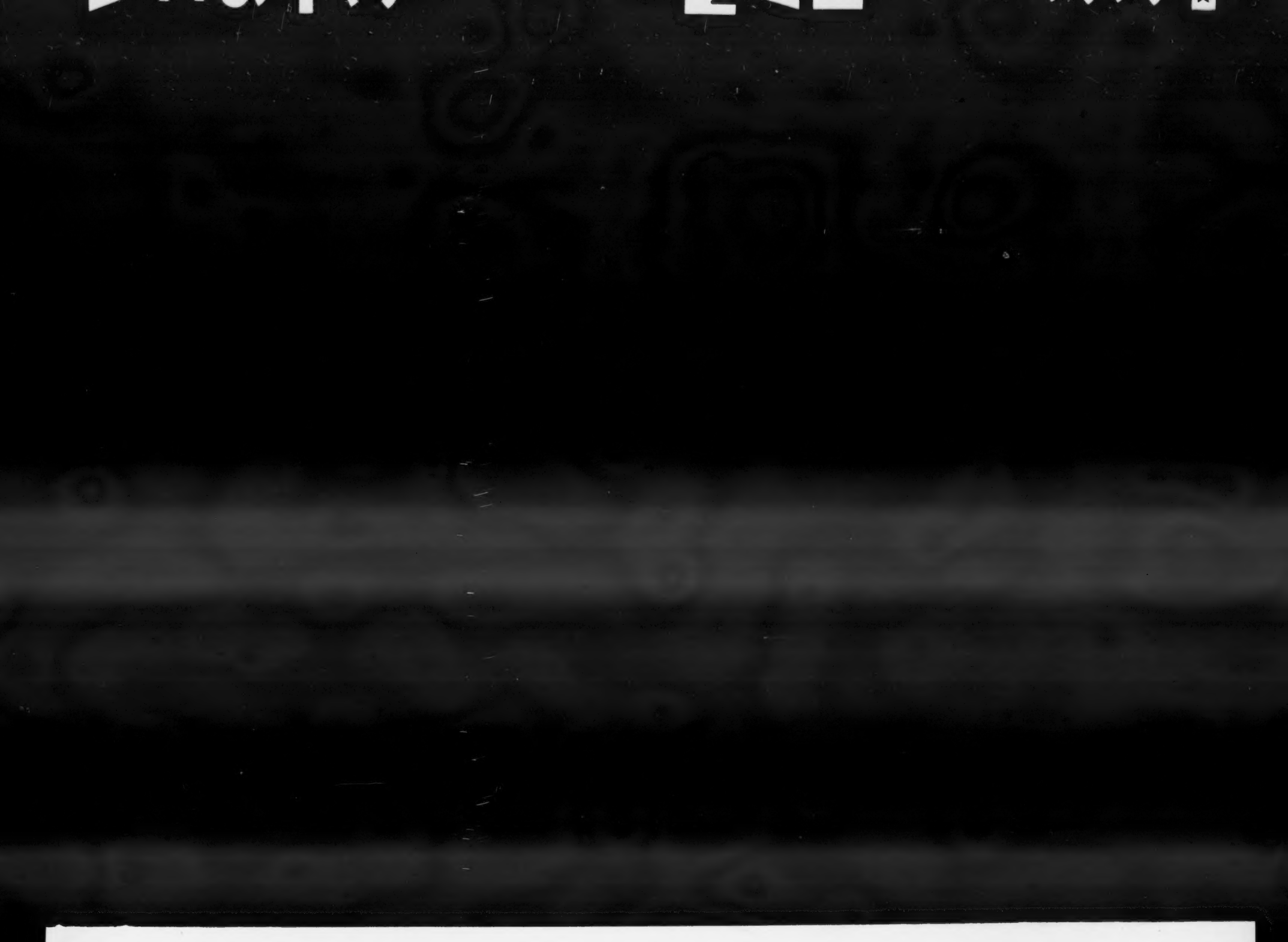
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